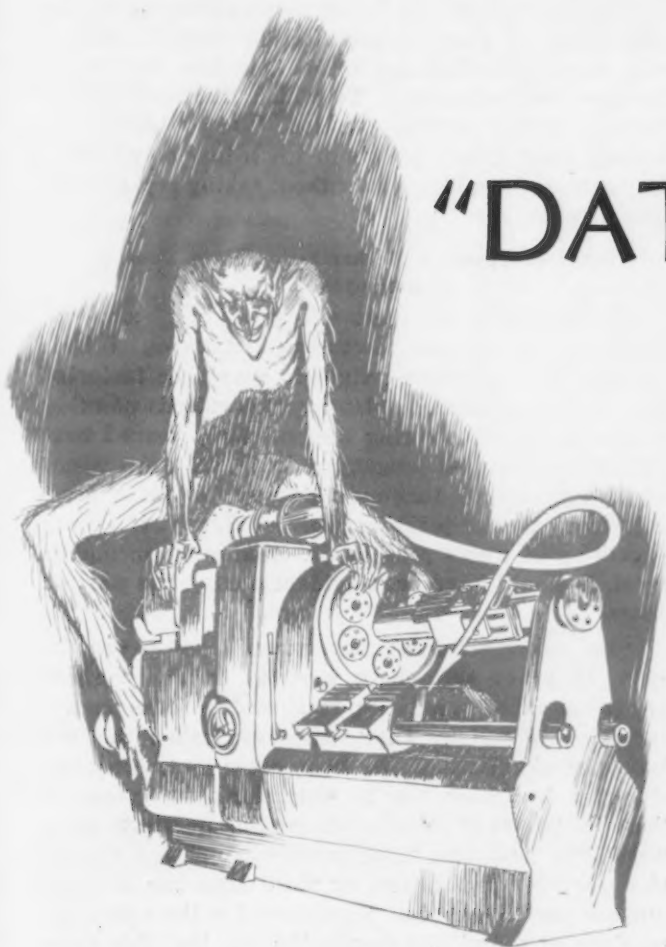


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"DAT OLE DEBIL," MACHINERY

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THE evils of mechanization form a popular subject of discussion abroad as well as at home. One has to have a "goat" for the present condition of employment.

Mahatma Gandhi takes a goat and a spinning wheel about with him wherever he goes. It is not certain that the goat of Gandhi typifies to him, in addition to nourishment, the evils of mechanization. It is known, thanks to our own Mr. Charles Chaplin, that Gandhi's spinning wheel does. For when these two distinguished world figures met recently in London, their conversation hinged upon improved and unimproved machinery. "Wouldn't it be better," suggested the professor of pantomime, referring to the spinning wheel, "if you used more up-to-date textile machinery?" And Gandhi replied: "Modern machinery would give our people too much leisure."

Saints and sinners, they are all talking about mechanization. The term "machine age" is becoming synonymous for less jobs for more people. Serious proposals are being made—and will be made in Congress probably, to ban improved machinery on some of our public works projects. The good old dog is rapidly acquiring a bad name.

Just a few weeks ago, the president of a prominent engineering society was quoted in the press as having said that inasmuch as engineers and inventors had brought about this condition of unemployment, it was up to them to find the way out of it for us. The first part of that statement will probably stick in lay minds longer than the last part of it. The general public is a goat hunter.

Multiply these instances by thousands and tens of thousands; pick up almost any newspaper almost any



day and you will agree that the "machine" is getting the spotlight nowadays.

Out of all of this tight and loose talk is crystallizing, in lay minds—and this includes political and legislative minds, too—a rather unflattering portrait of mechanization and what we call modern production. The chief attributes of the subject appear to be hoofs, horns and a barbed tail. "Dat Ole Debil" machinery is seen in action in this picture, tormenting unemployed millions with the red hot fork of technological displacement.

Machinery Needs a Voice

Thus far, the machine has paid little attention to the derogatory remarks and opinions hurled in its direction. Knowing that most of these were expressed by those knowing the least at first hand about the matter, it continued quietly about its business, permitting adverse comment to slide unnoticed from its iron back. But now that this thing has gone so far as to saddle it with chief responsibility for causing the present maladjustment in world affairs, it is due time for the machine to rise upon its hind legs and speak its piece. And also for the friends of mechanization and modernization to join the chorus. Otherwise, the gathering clouds of adverse public opinion may cast an enduring shadow over the machine, the men who build it and the men who use it, as well as over our future prospects.

Make no mistake, the machine has a convincing story to present to the public, a story not based upon plausible theory but upon forthright facts. A story

that is an undeniable record of performance. The machine cannot tell you who or what *did* cause this depression and neither can anyone else. But it can and will prove beyond question that mechanization has built no breadlines. The machine can look the public in the eye and say to it: "Here is my record, attested by Uncle Sam. You can see that in forty years of active and increasing use, I have not deprived one American worker of employment. Whenever I have closed one employment door I have opened another and a larger one."

"But," you may ask, "what about technological displacement? I know of actual cases where scores of men have been displaced from their jobs because of machine improvements." To which the machine will reply by asking another question. "Do you draw up a balance sheet from one side of the ledger only? Then why consider displacement without taking replacement into account, also?"

What 30 Years of Mechanization Have Done to Employment

"I have done my most effective work," says the machine, "in the manufacturing industries. I have wrought with increasing vigor in your shoe factories, steel works, automobile plants and hundreds of other production plants. During the past forty years I have fathered a countless progeny of improved mechanisms which are at work turning out every variety of products from pins to printing presses. Surely, if I were a gobbler of men's jobs and a creator of unemployment, it would have been evident during the past 40 years.

"Let us, as 'Al' would say, examine the record. In 1889, 40 years ago, there were 69 human workers per thousand of population employed in these 'manufacturing' industries that some have called the 'hot bed of mechanization.' In 1929, after my mechanical offspring had been put to work for forty years in these industries in countless increasing numbers, there were 72½ flesh and blood workers employed therein also per 1000 population, or more than the average number per thousand of population for the entire 40-year period. And this despite the fact that this average included the superintensive year of 1929, when industry was still geared to war proportions.

"Does this look as if I had caused unemployment, or permanent displacement even in those industries where I have been at work most intensively? Here



EVEN in the "hot-bed" of mechanization, the manufacturing industries, improved machinery has caused no displacement of labor during the past 40 years. For the number of workers, in 1929, in this industry, was greater per 1000 of population than the average number for the entire 40 year period.

HERE are the facts about technological displacement, and replacement also, during the last ten years: Sixteen workers left the farm, field and forest. One left the mines. Four left the large group comprising manufacturing, construction, etc. Total shrinkage, 21 workers, on the basis of each 1000 of population. Seven of these went into transportation; seven into professional service and seven into domestic service. In addition to absorbing the whole 21, three new workers were required for trade, clerical and miscellaneous work, and one new worker for public service. A net gain of 4 workers per 1000 of population during the last ten years.



are the figures; you may wish to show them to those who have been saying hard things about me.

DENSITY OF EMPLOYMENT IN OUR MANUFACTURING INDUSTRIES

Census Year	Wage Earners	Population	Wage Earners per 1000 of Population
1889	4,252,000	61,775,000	69.3
1899	5,306,000	74,798,000	71.2
1904	5,468,000	82,601,000	66.3
1909	6,615,000	90,691,000	73.0
1914	7,024,000	97,927,000	71.9
1919	8,998,000	105,003,000	85.5
1921	6,944,000	108,196,000	64.0
1923	8,777,000	111,511,000	78.6
1925	8,382,000	114,825,000	73.2
1927	8,350,000	118,140,000	70.6
1929	8,808,000	121,455,000	72.5

AVERAGE..... 72.3

Data from Statistical Abstract of the United States, 1930, page 791.

"During this same period of forty years, not only have I not diminished the number of jobs in the manufacturing industries per thousand of population, but

the wages of the workers therein have been almost doubled, not merely in dollars of fluctuating value, but in real buying power. Therefore you cannot charge me with causing unemployment, and you must credit me with nearly doubling the consuming power of wages.

What 30 Years of Mechanization Have Done to Total Employment

Some may say that the machine in stating this case, has been telling only a part of the story of employment; that the manufacturing wage earners of industry represent but one-fifth of our total number of breadwinners in all occupations. What has happened to the other four-fifths, including the farmers, the miners, the lawyer, doctor, business man and clerk? Mechanization has not been confined to manufacturing; we have had it on the farm, in business and in the home.

The machine has a convincing answer to this question. "In 1900," it says, "there were 383 breadwinners in the United States for each thousand of population. These included all 'gainfully employed' in all lines of industry, agriculture, business, professional service, domestic and public service, etc.



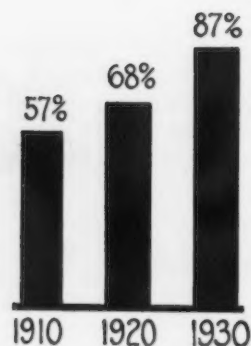
"In 1930, a depression year," continues the machine, "we find the density of employment greater instead of less. There were then 398 breadwinners for each thousand of our population; a gain of 15 workers per thousand over 1900. Look at it any way you like; over the whole picture of man's work or a sectional part of it, my participation has multiplied jobs; not diminished them.

Occupational Shifts During the Past Ten Years

"Take even the past ten years," mentions the machine, "during which time technological displacement is said to have been accentuated. Let us examine the record as to displacement and replacement, for we cannot strike a balance without putting the credits alongside the debits.

"Here is the occupational balance sheet, per thousand, by occupational groups during the period between 1920 and 1930:

"Sixteen workers left the farm, field and forest. One left the mines. Four left the large group combining manufacturing, the mechanical industries and construction. This represents all of the losses, a total of 21 workers per thousand of population.



OUR non-productive overhead has been going up. Perhaps this is one of the reasons for our present troubles.

In 1910, the number of workers in non-productive groups of the "service" type was 57 per cent of our wealth producing group workers.

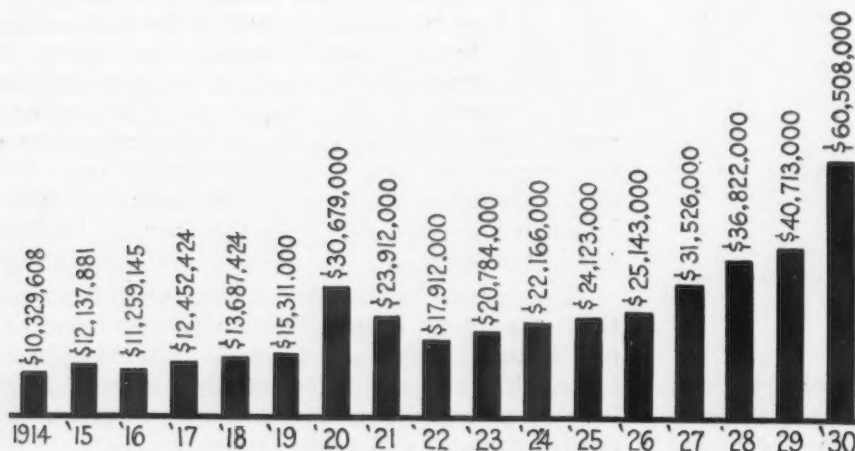
In 1920, it was 68 per cent.

In 1930, it was 87 per cent.

The machine has been carrying more and more passengers on its back.

"Seven of these displaced workers went into the field of transportation. Seven more of them were absorbed into professional service. Seven more entered domestic service, thus completing the entire absorption of the displaced. But in addition to this complete replacement, three new workers were needed for trade, clerical and miscellaneous work, and one new worker for public service. A net gain of four workers per thousand on the credit side of the employment balance sheet. And remember, 1920 was a boom year; 1930 a depression year.

"No," concludes the machine, "you cannot make me the scapegoat of depression. For 40 years, and more, my record has been one of construction, not destruction. Up to and into the depression year of 1930, I have continued to build employment. My work has been the honest creation of new values and new wealth. It has not been the blowing up of speculative bubbles. It is not my fault if you built upon my back a structure of inflated capital values too great for any machine to carry, and which finally toppled under its own excessive weight. Put me to work again, honestly and intelligently, and I will again rebuild wealth and employment."

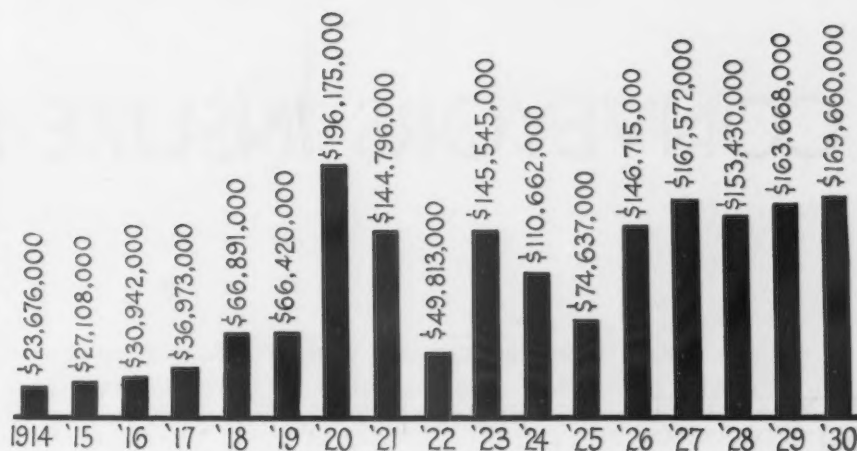


HERE is the record of cost of the Department of Agriculture; the "service department" of the American farmer. It has gone up, in cost, 718 per cent since 1914. This service costs us \$28 per farm per year today.

▲ ▲ ▲

GOVERNMENT expenditures form part of our general "overhead." Here is the way in which the cost of the Department of Commerce, which is the "service department" of industry and business, has gone up. A 585 per cent increase since 1914.

▼ ▼ ▼



Instead of ascribing our present troubles to too rapid an advance in efficiency of production, we might find them in increased "overhead."

Agriculture, mining, manufacturing and construction are our basic wealth producers. These groups of industries, with the aid of machinery and power, transform our natural resources into needed and pleasing things for mankind. Without them, there could be no creation or distribution of wealth.

Transportation, trade, public, professional and domestic service are necessary adjuncts of production, and of living. They facilitate wealth production, but in themselves they create no new values. They may be called our "overhead."

Here is the way our "overhead" has been going up:

In 1910, the number of workers comprising the "overhead" occupations was 57 per cent of the number in the "productive" groups. In 1920 it was 68 per cent, in 1930 it was 87 per cent. A pretty rapid increase in 20 years' time in the number of passengers riding upon the machine.

Transportation, for example, jumped from 28.6 workers per 1000 of population in 1910, to 36.1 in 1930.

Professional service jumped from 18 per 1000 in 1910 to 27.9 in 1930.

Public service jumped from 5 per 1000 in 1910 to 8.6 in 1930.

When overhead increases faster than volume in a privately owned industrial plant, the management sees trouble ahead. And, if it is wise, it begins to prune.

More men, women and machines engaged in our actual wealth production and fewer lawyers, politicians, public servants, financiers in the "overhead" may be one way to refinance consumption.

What Goes Up Stays Up

Certainly, slowing down our machines and declaring a moratorium on improvement will not give us the

wherewithal to pay either more doctors' bills or dividends.

"What goes up must come down," is an old proverb which seems to apply quite aptly to successive business cycles. Overhead creeps up on us unawares during profitable times. Additional services, which cost money, are instituted for the benefit of our customers. When the time to prune overhead comes, it is surprising to us to find that we can dispense with a great many of the "services" which we thought were indispensable. We pare the overhead structure down as close to the machine that is carrying it as possible, not through choice, but necessity.

If the machine had a voice; if it were gifted with organized influence or had the oratorical powers of a congressman, it might say a word or two to Uncle Sam on the matter of government overhead. For in government the old proverb does not work. What goes up stays up. When government income falls, the first thought of our legislators is to increase taxes. Pile more burden on the back of the machine, lame though it may be. The last thought is to prune the overhead.

If the machine could speak with the eloquence and influence that its record entitles it to, it would say to Uncle Sam: "Investigate and prune your overhead. Your government employee's job and pay is no more sacred than the jobs and the pay of the men and women who work with me in industry; on the farm and in the mine.

"Look, for example, at the record of expenditures for the Department of Commerce, the service department for business and industry. Its cost has increased 585 per cent since 1914, as compared with our national business increase of a little more than half that percentage. With its commercial attachés scattered broadcast over the civilized world, feeling the pulse of business and industry in every land; with its elaborate fact finding and statistic interpreting organ-

(Concluded on page 983)



CONVEYORS INSURE MAXIMUM



FLEXIBILITY is the word which probably best describes the new gray iron foundry of the American Foundry Co., Indianapolis. Designed to make cylinder blocks and other castings for the automobile industry, it is arranged to get maximum production in minimum space largely by means of mechanical conveying equipment. The company has abandoned straight-line manufacturing in favor of a U-shaped formation with the maintenance department and material storage yard in the center. Only moderate in size, the plant has combined the best practice of the large foundry with the favorable features of the small. The result is an efficient plant operating at a surprisingly low cost.

Four Independent Foundry Units

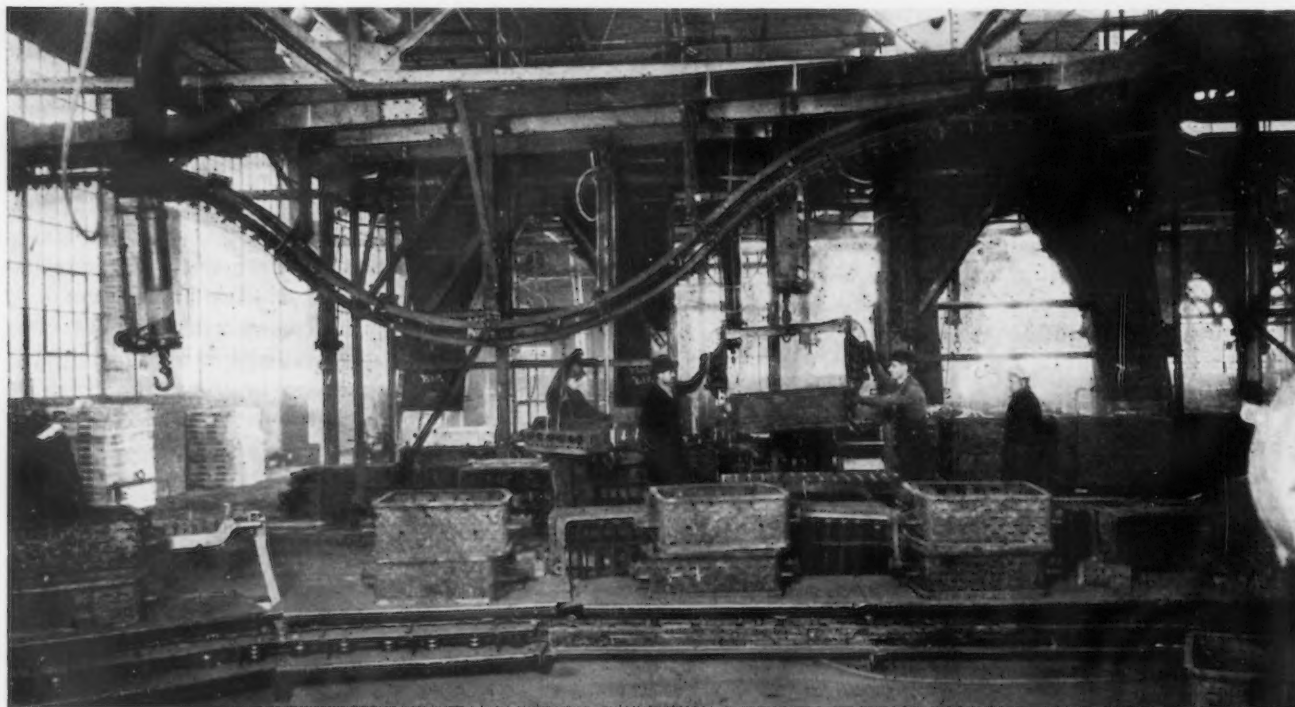
Four separate units, each independent of the other, make up the foundry department. The two at the west end of the building are identical and are used for high production jobs. The third unit is run on fair-sized orders. It likewise supplements the work of the first two units whenever desirable. The fourth is a bench work unit for special castings the quantity of which does not justify putting them through the mechanized

process. This system enables the company to segregate its orders according to size and intricacy of design and, in effect, to have within a building 100 x 160 ft. four complete molding, pouring and sand-conditioning units.

Molds are made in unit No. 1 on four molding machines set on a 14-ft. turntable made of 12-in. channel irons. On the outside of the channel irons are angle clips to support a gear rack. Reinforcing the table are 6-in. I-beams, which extend across the table at right angles and are welded to the channel irons, thus forming the support for the grate on top of the table. The table itself rests on six 16-in. chilled cast iron wheels, being driven by a 5-hp., 1200-r.p.m. motor. The turntable rotates at a variable speed of one revolution in 8 min. to one in 4 min. and can be set to meet the ramming speed.

Serving the molds on the turntable is a sand slinger, which fills a flask in 12 sec. The flask then is lifted by air hoist on to a steel conveyor thence passing through the various operations of cleaning, spraying, skin drying and core setting. When it has reached the opposite side of the sandslinger, the cope is added and the mold travels to the pouring station nearby. After

▲ ▲ ▲  VERHEAD monorail conveyor dips at shakeout station to pick up castings to be taken to cooling room. Foundry unit No. 3 is in the background. ▲ ▲ ▲



OUTPUT IN MINIMUM SPACE

STRAIGHT-LINE manufacture of gray iron castings has been abandoned by the American Foundry Co. at Indianapolis in favor of a U-shaped formation, with the maintenance department and material storage yard in the center. There are four independent molding, pouring and sand-conditioning units in a building 100 x 160 ft. Two units are identical and are used on high-production jobs. The third unit is run on fair-sized orders and supplements the work of the first two when necessary. The fourth is a bench work unit for special castings. Two 84-in. cupolas are connected with two centrifugal blowers, the smaller of which is used when the hourly melt is 9 tons or less and the larger when it is more than 9 tons. Thus the cupolas are operated on alternate days on a steady run of business, this practice being employed in preference to having different-sized cupolas for large or small production.

the iron has been poured the mold stays on the conveyor for 20 to 30 min. until it arrives at the knockout machine.

Following the knockout, the casting is lifted by air hoist on to a steel table, where it is picked up by an overhead monorail carrier and taken to the cooling room. Incidentally the knockout machines for units No. 1 and No. 2 are in close proximity, only the steel storage table separating them. This makes it possible for the monorail conveyor to serve both units economically and with a minimum of trackage.

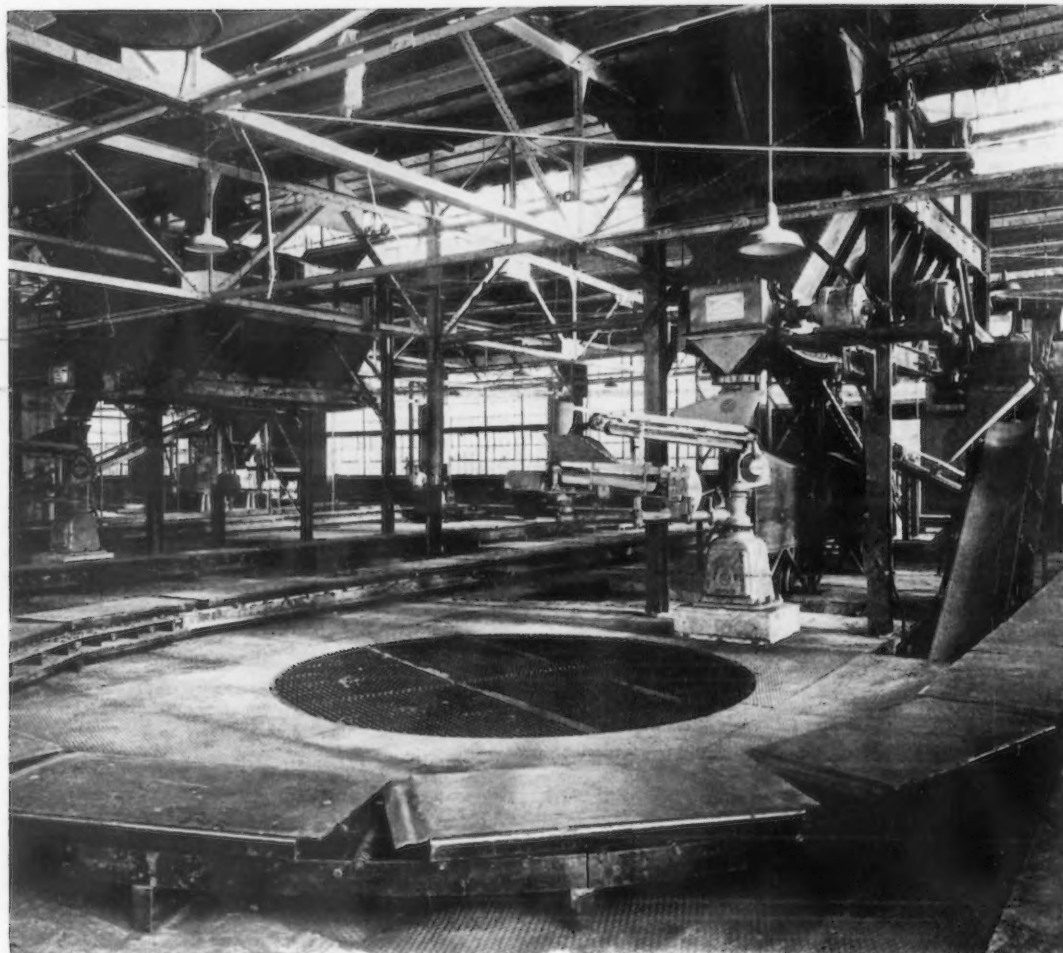
Sand from the flask passes through the shakeout grate on to an apron conveyor over which is mounted a lump crusher consisting of a counter-balanced pulley 28 in. wide driven by a 3-hp. motor. The crusher breaks up the large lumps of sand before they pass into the general foundry sand system. The apron conveyor, running at a speed of 100 ft. a minute, delivers the sand from the shakeout to a second apron conveyor which collects the spillage sand pass-

ing through the grate of the turntable. This conveyor discharges the sand on to an inclined apron belt conveyor, which carries it up to a riddle machine. Near the upper end of the inclined conveyor and directly above it is a magnetic pulley belt which draws from the sand any tramp iron and discharges it into barrels.

At the top of the inclined conveyor the sand goes through a reciprocating screen 36 x 48 in. equipped with a 5-hp., 1200-r.p.m. motor and having a capacity for handling 60 tons of sand an hour. Below the screen is a continuous muller of new design, consisting of two rubber-tired mulling wheels rotating on a 42-in. apron conveyor. Each wheel is operated by a 15-hp., 1200-r.p.m. motor.

Sand falls from the muller through a chute to a 24-in. belt conveyor which carries it 14 ft. to an inclined belt conveyor running 50 ft. up to a cross belt near the ceiling, these last two conveyors forming a T. The cross belt conveyor is equipped with a reversible drive, so that it





MOLDING, pouring and sand-conditioning unit No. 1 is for high production work. Molding machines are set on turntable (foreground). Sand slinger fills flasks in 12 sec. Various operations of cleaning, spraying, skin drying and core setting are performed while flask is on steel conveyor.

can alternately fill with sand the 50-ton hoppers which are part of both the first and second units. In connection with the hoppers are two sand aerators, which aerate the sand and deliver it to the hoppers. The hopper for each unit is located so that it discharges sand into the sand slinger beneath it.

Third Unit Handles 18 Tons of Sand an Hour

The third foundry unit consists of a mold conveyor and sand-conditioning machinery. The 30-in. gravity mold conveyor is comprised of a straight section 67 ft. long, a 180-deg. bend section with a radius of 11 ft. at the center, and another straight section 54 ft. long. From the knockout station back to the molder's position is a third straight section 31 ft. long.

At convenient positions opposite the sand hoppers are two jolt roll-over machines for the drag and two for the cope. After the various molding operations are completed, the iron is poured with the mold resting on the conveyor. The mold then is pushed by an air-operated device along the gravity conveyor, moving slowly for 40 min. until it arrives at the shakeout station. There the casting is lifted out of the mold and placed on the same conveyor which serves units No. 1 and No. 2 to go to the cooling room. One out of every four carriers on the conveyor passes units No. 1 and No. 2 and picks up a casting from unit No. 3.

On the vibrating screen at the shakeout the sand is freed from lumps, core rods and gagers, passing through a hopper on to an 18-in. magnetic separator

conveyor which carries it 56 ft. to a steel discharge chute and thence into a measuring hopper, a steel deflector plate taking the tramp iron down a passage-way into metal containers on the floor. The sand drops through the gate in the bottom of the measuring hopper into an 8-ft. Simpson mixer operated by a 35-hp., 900-r.p.m. motor.

From the mixer the sand is taken on a 20-in. belt feeder at the rate of 50 ft. a minute to a bucket elevator nearby, which carries it up 26 ft. and discharges it into a conditioner. Here the sand is aerated and seasoned, being delivered to a distributing belt conveyor which takes it to four 5½-ton hoppers equipped with gates operated from the molding stations. Unit No. 3 has capacity to handle 18 tons of molding sand an hour.

Only Bench Work in Fourth Unit

Unit No. 4 is adapted solely to bench work. It consists of several portable jolt squeeze machines on which the molds are made. There are two small sand hoppers below which the molds are prepared. The molds are then picked up by hand and placed on a gravity roller conveyor, which transports them near the cupolas where the iron is poured. Remaining on the conveyor, they pass to the opposite side of the unit and are shaken out by hand directly over a sand throwing machine, which throws the sand up into the hoppers.

Each of the two 84-in. cupolas has a melting ca-

capacity of 7 to 13 tons an hour. Both are connected to two centrifugal blowers the smaller of which is used when the hourly melt is 9 tons or less and the larger when it is more than 9 tons. This practice makes it possible to operate the cupolas on alternate days on a steady run of business and is employed in preference to having different-sized cupolas for large or small production. There is an actual saving in operating costs by this method and the investment is less, thereby lowering overhead expenses.

The foundry department is equipped with a Loudon overhead monorail conveyor system, spreading out from the cupolas to all four of the pouring stations and reaching into other parts of the department. Hot metal from the cupolas is tapped into 2-ton ladles, which are hung on the monorail conveyor and moved by two men to the pouring station. Slag from the cupolas is taken in large buckets on the Loudon conveyor into the yard where it is dumped.

The material storage yard, under roof, is 180 ft. long and is divided into bins for coke, limestone, various grades of pig iron and cast scrap. It is served by two 3-ton overhead electric cranes. Cars can be spotted alongside the yard, which is on a siding on the main line of the Indianapolis Union Belt Railroad. About 75 per cent of the material goes direct from the railroad freight cars down a chute into a cupola charging bucket, which rests on a scale. After a charge (2200 lb.) is made up, the bucket is picked up by a Shepard 3-ton charger, taken to the cupola and emptied through the bottom of the bucket. Five men are required to get the material from the railroad freight cars into the cupola: One man (crane operator) unloads the cars, three men make up the charges

and one man operates the charger. This crew handles 125 tons a day.

A Cooling Room Is a Feature

Castings which have been knocked from the molds are transported on the overhead monorail conveyor from the foundry department to the cooling room in an adjoining building. This is equipped with a separate somewhat heavier monorail conveying system. It is operated as an independent unit so that it will not tie up either the foundry conveyor or the one serving the finishing departments. Castings are transferred to it from the foundry conveyor by a light crane.

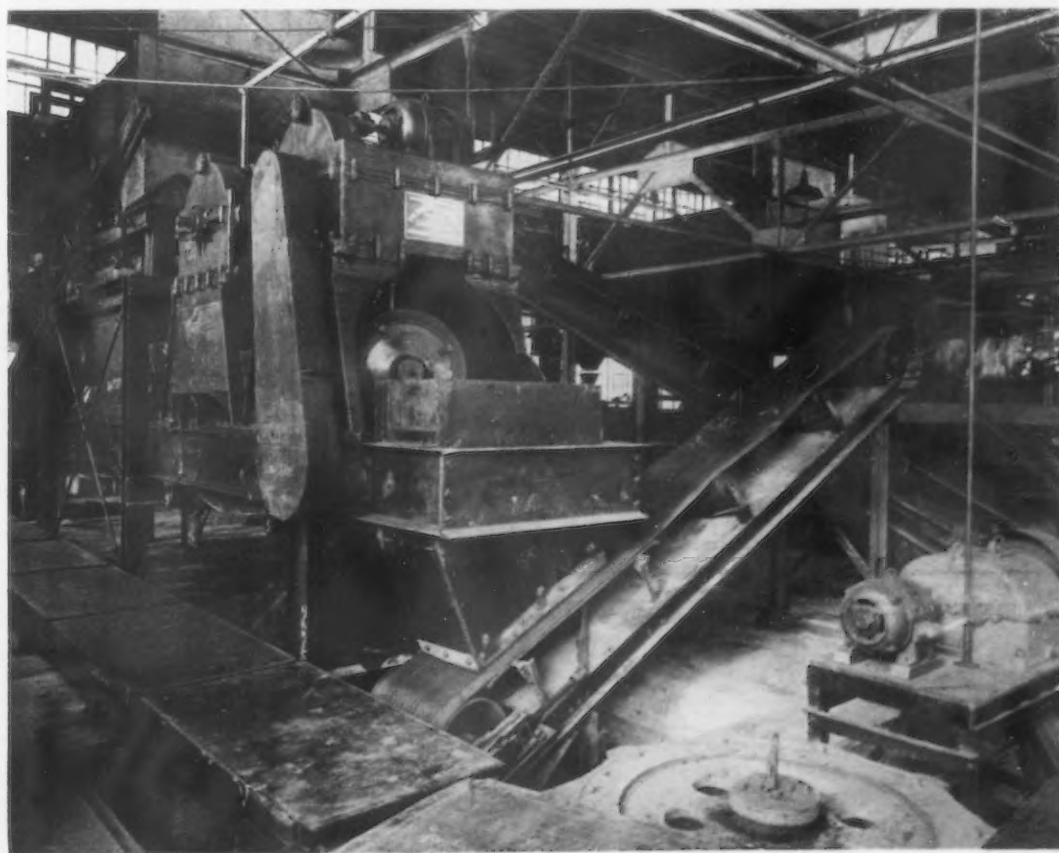
Arranged in the form of loops running the length of the cooling room, which is under roof but has no side walls except one separating it from the finishing departments, the conveyor is timed so that a casting is en route 3 hr. from the foundry department until it arrives at the knockout machine at the end of its journey through the cooling room.

The casting is removed from the conveyor and placed on the knockout machine by a second light crane. Extraneous material drops on an inclined belt conveyor, which takes it up through a magnetic separator and thence into a refuse tank outside the building.

From the knockout machine, castings are lifted by crane to a third overhead monorail conveyor to be carried to the tumbling barrels where they are cleaned. They then pass on an overhead conveyor through a sandblast room and are delivered to one of four roller conveyors for the finishing operations of grinding, buffing and inspection.

If a casting has a defect which can be remedied without its being totally rejected, it is hung on an

RECIPROCATING
screen handling
60 tons of sand an
hour and continuous
muller of new design
are parts of foundry
unit No. 1.





When sand is needed in core room, it flows from storage bin through door in wall into a measuring hopper on wheels, which is pushed by hand to a sand-mixing machine where it is dumped. These machines are installed in a pit 6½ ft. deep with their tops about half a foot below floor level. ▲ ▲ ▲

overhead monorail conveyor at the end of the roller conveyor lines and taken to a special repair department nearby. When this department has completed its task, the casting returns to the head of the finishing department to travel again through the final operations.

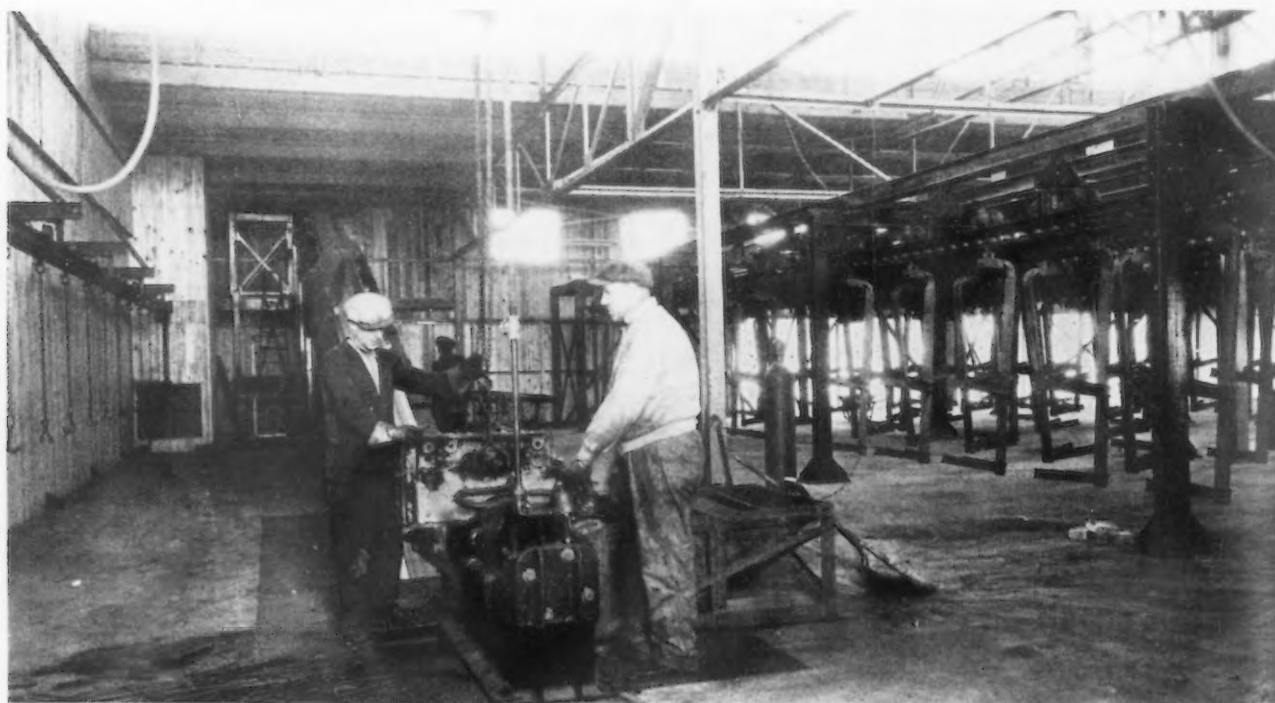
Core Sand Is Stored in a Building

Sand for the core room is unloaded from railroad hopper cars into a Link-Belt track hopper, which feeds an apron conveyor leading to a bucket elevator. This elevator discharges the sand on a distributing belt running the length of the sand storage bins. At intervals of 8 ft. along the belt are plows which divert the

sand to various parts of the storage space. However, 80 per cent goes over the end of the belt and is put into production immediately. All of the sand behind the production line forms a reserve supply, which is drawn upon principally during the winter months. By having all sand stored inside the building, the company has eliminated troubles arising from frozen sand and sand which has a mixture of deleterious foreign matter acquired in outside exposed stock piles.

When sand is needed, a door in the wall of the storage bin is opened and through it the sand flows into a measuring hopper on wheels, which then is pushed by hand to a sand mixing machine where it is dumped. These machines are installed in a pit 6½

Cooling room has separate monorail conveyor arranged in loops running length of room (right). After cooling, castings are knocked out on machine in foreground and extraneous material passes up a belt and into a refuse tank outside the building. Castings then are hung on monorail conveyor (extreme left) to go to tumbling barrels. ▲ ▲ ▲



ft. deep with their tops about half a foot below the floor level. After the sand is mixed the operator pulls a lever control from the floor above the machine, opening a door on the side of the mixer and allowing sand to pass through to an electric riddle.

From the riddle the sand drops into a steel hopper, which is divided into four equal sections and which has the same capacity as the mixing machine (110 gal. or 14.7 cu. ft.). While the hopper is being filled, it rests on a dolly on a track in the basement of the building. As soon as it is full, it is picked up by an air hoist which carries it down an aisle between two rows of core benches. By opening separately the four divisions of the hopper, the operator can deliver

through the finishing or assembly operations, setting them on the conveyor which delivers them to a dipping tank. Here they are placed by hand on a dipping frame which holds 12 to 16 cores. The frame then is lowered by air hoist into the dipping tank.

When the cores come out of the tank, the drippage is blown off by air and the cores are put on steel racks again and transported a second time by electric truck to the core ovens, where they are dried for 15 to 20 min. After removal from the ovens, the cores are taken on the racks to the end of the building for inspection and storage. They are delivered as needed direct to the molding floor in the next building.

As previously stated, the U-shaped buildings are

▲ ▲ ▲
BENCH work unit for special castings is at the left. Two 84-in. cupolas are used in preference to different-sized cupolas for large or small volume of work. Overhead monorail conveyor serves the cupolas.



▲ ▲ ▲
sand to four core benches, two on each side of the aisle.

After the hopper has been emptied of its contents, it is returned on the monorail to a position directly above an open pit adjoining the sand mixing machine. Here it is lowered to the dolly, which moves by gravity underneath the electric riddle. The core room is equipped with two mixing machines, one for the general run of work and another for special sand, such as the dry jocket grade. For certain types of work sand is dried in a Pangborn sand dryer.

There are six rows of core benches with 14 to 18 benches in each row. Steel core racks, 5 ft. square and 6 ft. high, are stationed behind the core makers. These racks are picked up by electric trucks and taken to the core ovens, of which there are 28 arranged in four rows, seven to the row. Holding two core racks each, the ovens are oil-fired and of the brick, stationary type.

After a period of 1 to 4 hr. in the ovens, the cores are removed by truck and taken to steel shelves nearby for temporary storage. Paralleling these shelves is a gravity roller conveyor 70 ft. long beside which men work at portable benches. These men put the cores

regarded as superior to a straight-line arrangement for handling material and for service demands. The maintenance department occupies a small building in the center of the U, where all production departments are readily accessible. The material storage buildings likewise are in the middle, with the silica sand in a structure close to the cleaning department. One of the storage buildings is used for fireclay and molding sand with space between the two materials for mixing them for ladle and cupola linings. In addition to the manufacturing buildings there is an office building which not only houses the executive staff, but also is equipped with shower baths and lockers for employees.

Equipment for the new plant was supplied by the following firms: Foundry units No. I and No. II by the Beardsley & Piper Co., Chicago; foundry unit No. III by the C. O. Bartlett & Snow Co., Cleveland; sand conveyor serving the core department by the Link-Belt Co., Chicago; overhead monorail conveyor in foundry department and in finishing departments by the Loudon Co.; overhead monorail conveyors from foundry department to cooling room and in cooling room, Palmer-Bee Co., Detroit; and core ovens, Foundry Equipment Co., Cleveland.

RIVETING OR WELDING RUSTLESS S

At the May meeting of the American Iron and Steel Institute, the author presented a paper entitled "Corrosion Resistant Alloys of the Stainless Type in Use and Fabrication," an abstract of which appeared in *THE IRON AGE*, June 11, 1931. The discussion of this paper led to the suggestion that I was pessimistic regarding welding these alloys.

In view of these remarks and in fairness both to myself and the industry, the author feels justified in writing this article to clear the air, feeling that this

there has been a spirit, to some extent, of rivalry between the manufacturers of welded and riveted design. However, today most fabricators of any standing are in a position to build such equipment by either process. Therefore if the fabricator is in a position to manufacture chemical equipment by either the welded design or riveted design, it becomes perfectly obvious that any doubts that remain are those entertained either by the manufacturer of the material or by the ultimate user.

The fabricator usually concerns himself with the

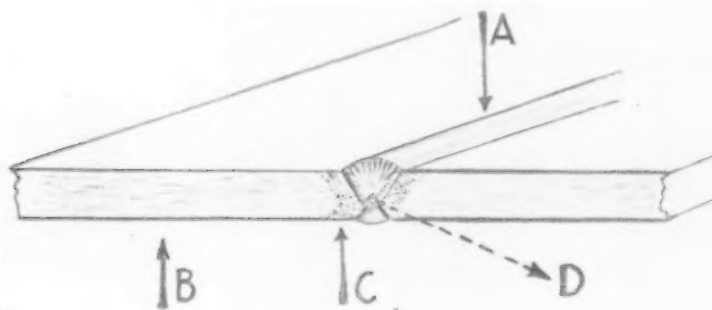


FIG. 1.—Diagram (left) representing the various metallographic conditions which can be produced by welding two pieces of 12 to 14 per cent low-carbon chromium material with welding rod of similar analysis.

Fig. 3.—A diagrammatic sketch of the grains in the rustless steels after welding.



may be of advantage alike to the manufacturer of the materials, the fabricator and the user of chemical equipment.

Chrome Iron for Chemicals

At the time the first chemical installation for the manufacture of nitric acid was the subject of discussion, it was decided to fabricate this from chromium iron. Riveted design was decided upon because of the air-hardening tendencies of the lower chromium alloys, and further because the higher chromium alloys, while non-hardening, were subject to grain growth and subsequent embrittlement.

It should be understood that at that time (1925) comparatively little was understood of the chromium-iron alloys containing upward of 16 per cent chromium, so far as the fabrication of this type of installation was concerned. The first installation, however, established something of a precedent not only for the use of upward of 16 per cent chrome iron, but also riveted design. To this and successive installations can be traced the popularity of chrome iron and riveted design in the United States in contrast with much of the welded work of the chrome-nickel type to be found in use abroad.

The author realizes that for a considerable time

physical condition of the material, in this instance with its malleability, the facility with which it can be hot and cold worked, and, of course, whether or not the material can be welded in such a way that a welded joint can be produced with physical properties at least closely corresponding to those of the adjacent metal. Beyond this point, as a rule, the fabricator does not go. The manufacture of the material is not in his hands and seldom does he know much of the metallurgy of the case or details of the corrosive conditions the equipment must meet.

Therefore, eliminating the fabricator temporarily, the two parties who are really the deciding factors of riveted or welded design become the steel manufacturer himself, because of his knowledge of the alloy, and the chemical engineer who is going to use the equipment to contain some corrosive solution.

The early optimism of alloy manufacturers which allowed unqualified statements to go forth that these

LESS STEEL STRUCTURES

By T. HOLLAND NELSON
Consulting Metallurgist,
Philadelphia

MANY problems arise when either the riveting or welding of the various rustless steels is under consideration. Air-hardening tendencies have made satisfactory welding of the lower chromium alloys difficult. While the higher chromium alloys are non-hardening, they are subject to grain growth and embrittlement. Welding apparently can be done most successfully with chromium-nickel steels of the 18 and 8 type.

The author, recognized as an authority in this field, states that many weld failures are due to reliance on small test pieces as examples of welding results and deprecates this. A concluding article will discuss carbide precipitation and other important problems.

alloys could be readily welded by either oxyacetylene or electric arc led to considerable difficulty when it came to manufacturing equipment. It was this optimism of the manufacturer of materials and welding equipment that led to considerable trouble; but optimism is not without its advantages, and failures, so long as the causes are known, while unpleasant, are but the necessary stepping stones to the attainment of the desired result.

With this foreword let us pass on and study the materials themselves, following the history of development and the progress made in the art of welding.

If welding means no more than sticking two pieces of material together with a third piece of the same analysis, one might say that most of our difficulties have been overcome, but welding when it comes to handling corrosive solutions, gases or vapors becomes a question involving mechanical, metallurgical and physical problems, assuming for the purpose of the

argument that the chemical analysis is constant between the material to be welded and the weld metal.

In various lectures I have given on this subject throughout the United States I have used the illustration that the chemist can do many things, but he finds it extremely difficult to upset fundamental laws and, while we have many things the same chemically, there can be sufficient difference within them physically to produce serious attack under corrosive conditions.

Original Stainless Steels Are Air Hardening

Let us take the 12 or 14 per cent chromium original stainless steel of the Brearley type. Practically all these materials, irrespective of carbon content, are distinctly air hardening and correspond more or less to the types referred to as the martensitic or semi-ferritic type. Let us take two fully annealed pieces of this material, which would be the only type the fabricator would be interested in, and attempt to weld them with the same type of welding rod. In the art of welding by whatever method we use, we usually endeavor to introduce liquid metal of the same composition into an area between two pieces of wrought metal. Chemically we may have the same combination but metallurgically and physically we have a series of different conditions.

Fig. 1 will illustrate the writer's view better perhaps than words. It will be seen from this that we have, in introducing the liquid metal at say 2700 deg. F., quite a number of complications which would have a bearing on the behavior of such a surface when put in contact with any type of corrosive solution or electrolyte.

In the first place, with the lower chromium ma-

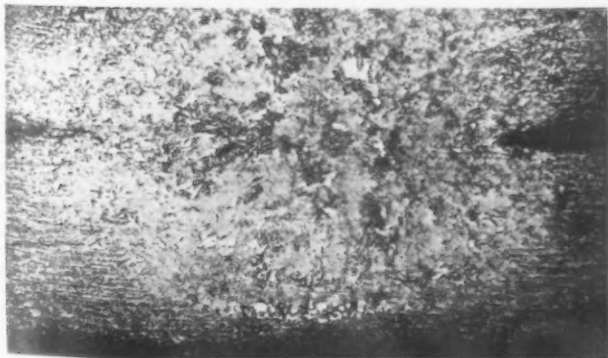


FIG. 2.—Section through spot weld of 10 gage low-carbon 12 to 14 per cent chromium material. (Monypenny, "Stainless Iron and Steel").

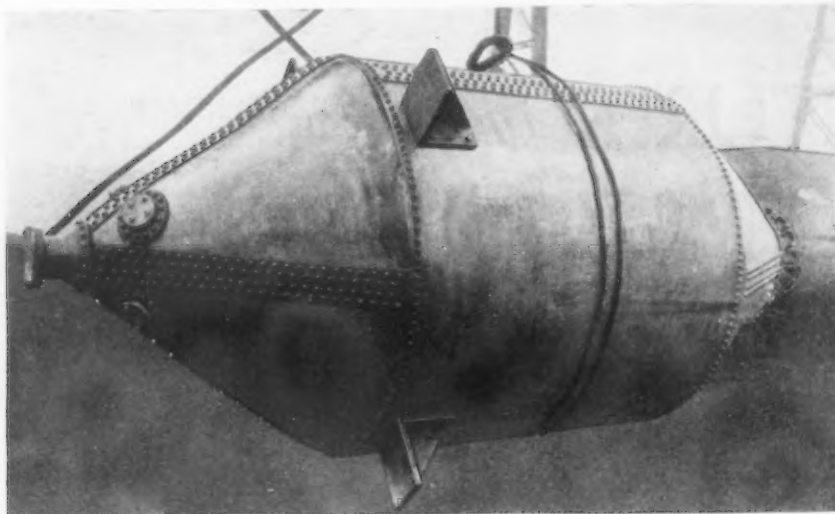


Fig. 4.—Photograph of riveted digester (Cr 18% Ni 8%) for use in the nitrocellulose industry.

materials, we have the air-hardening type. In introducing the molten weld metal we obviously create a heat gradient away from the weld metal itself and this produces hardening and tempering effects of various degrees. The weld metal itself is chilled quite rapidly and would be either martensitic, or martensitic with some austenite present, whereas the material in the heat gradient adjacent to the weld would vary in structure according to the temperature attained.

Now physically, what have we? In the weld metal itself we have a partially martensitic cast structure. The plates themselves represent the annealed structure of the wrought metal. In the area adjacent to the weld we have a variety of structures as explained above.

Welds from the Fabricator's Standpoint

Let us now consider the weld from the fabricator's standpoint. Such welds as a rule are comparatively hard and brittle. In many cases, hardening cracks will develop as the welding proceeds, usually not only in the weld metal itself but alongside and parallel to the weld. Knowing that with the 12 to 14 per cent chromium alloys we have a material that will harden and temper, it would appear that heat treatment (i.e., annealing) is all that is necessary to remove this condition.

This is of course quite true if it is possible to fully anneal the whole structure. However, when we have accomplished this, from our knowledge of corrosion resistance in relation to these lower chromium alloys, we have the material in its least satisfactory condition to withstand corrosive attack.

Moreover, we are still without a homogeneous structure between the weld metal introduced and the wrought material of the plates that have been welded together, and this is very often quite sufficient to generate electrolytic action between the two areas producing failure at this point.

Rustless Steel Types Do Not Air Harden

Passing on to the higher chromium alloys, and by this I mean the material containing carbon under 0.10 per cent with chromium 16 per cent up to as high as 25 to 30 per cent—these materials do not air harden,

they belong to the type known as the ferritic-chrome alloys and therefore one might reasonably assume that the higher chromium alloys with low-carbon content could be welded without this hardening and embrittling tendency.

By embrittling in this sense I mean embrittling produced by a hardening effect and substantially this is true, and may I repeat that, if the art of welding was merely sticking two pieces together, these high chromium alloys could be welded entirely satisfactorily. However, all these simple chrome alloys, when submitted to elevated temperatures, are

subject to rapid grain growth and whereas it is possible to weld them in the sense of making them one complete unit, we again have a physical condition together with physical properties which are far from those to be desired.

Fig. 3 illustrates fairly well the author's views on this subject. Here again we are confronted with material with extremely large grain size in the welded metal and various degrees of grain size in the heat gradient away from the welded metal.

The physical weakness of the chrome alloys with large grain size is well known; their resistance to shock is practically negligible, however, as pointed out by Dr. F. M. Becket in his discussion of the paper previously referred to. It is possible by certain heat treatments to toughen this structure somewhat, but again we are confronted with the varying physical conditions producing electrolysis in certain electrolytes.

However, it should be clearly understood the author realizes that, with the higher chromium alloys, electrolysis in many chemical solutions can be substantially disregarded. The physical weakness, however, must be given due consideration and limits the use of such welded structures considerably.

Repeated reference has been made to heat treatment, but when it is understood that temperatures upward of 1700 deg. F. are necessary and where installations of the magnitude of Figs. 4 and 5 are involved, it is at once apparent that it is no simple matter and that anything that could be done to render such a step unnecessary would be a decided advance.

Small Sample Tests Unsatisfactory and Misleading

Perhaps the cause of more failures than we are prepared to admit is due to the willingness of manufacturers to submit small sample test pieces of welded material for the purpose of tests. Usually such test pieces can be welded without cessation of the welding operation at any point and such small pieces can be readily heat treated.

It has been the regular custom to submit such test pieces for the purpose of demonstrating the mechanical strength, the soundness of the weld and its resist-

ance to attack. But the fabricator and chemical engineer, who are to make and use the material respectively, cannot take too much for granted from a test piece of pocket size when considering installations involving hundreds of tons of material. They cannot consider a short weld that can be made without stopping, either by oxyacetylene or the electric process, as indicative of equipment involving thousands of feet of welding where stopping and starting is in evidence every two or three feet.

They cannot consider a test piece of pocket size which can be heat treated to produce ideal conditions as indicative of huge installations for which there would be only limited means of heat treating. Therefore we have passed through an era wherein the manufacturer's desire to propagate sales has led to claims being made, not with any deliberate intention to mislead, but with the hope that, from test pieces submitted, the fabricator might be able to duplicate in the larger structures what the manufacturer had been able to demonstrate in miniature.

In this direction I am not unmindful of the fact that several large fabricators have installed furnaces for the treatment of completely fabricated equipment. However, to the best of my knowledge, little of this equipment can be taken to a temperature in excess of 1800 deg. F. And, whereas this treatment is decidedly advantageous and would render such equipment perfectly satisfactory for many purposes, it could by no means be considered the metallurgical ideal, it being generally agreed that to produce complete homogeneity with all carbides in solution in the 18 and 8 type chrome-nickel alloy a temperature of approximately 2000 deg. F. would be necessary. At such a temperature the difficulty of supporting a complete structure immediately becomes apparent and is one of the serious drawbacks in obtaining the ideal conditions in welded structures of the chrome-nickel series.

Special Atmospheres and Coated Welding Rods

From time to time claims are made for different types of welding equipment. A variety of claims are made concerning these various improvements and their ability to surmount obstacles experienced in the welding of these straight chromium and chrome-nickel alloys. Sometimes it is the use of a special atmosphere that will insure a certain condition; other times it is the use of special coating on the welding rods to produce the desired result, but I ask the reader to look at this problem as a practical one.

Atmospheres and welding rod coatings, while assisting considerably in producing welds free from oxides and flowing very nicely so far as the art of welding is concerned, have been advances rather in the art of producing a better weld in the sense of solidity of weld, elimination of the porosity, elimination of slag inclusions, etc. But have we attained



Fig. 5.—Photograph of typical welded structure.

anything at all on the physical side other than the general improvement that one would expect from a cleaner and more solid weld metal, or have any of these processes done anything to prevent the natural tendency of the material for grain growth, air hardening, tempering, etc.?

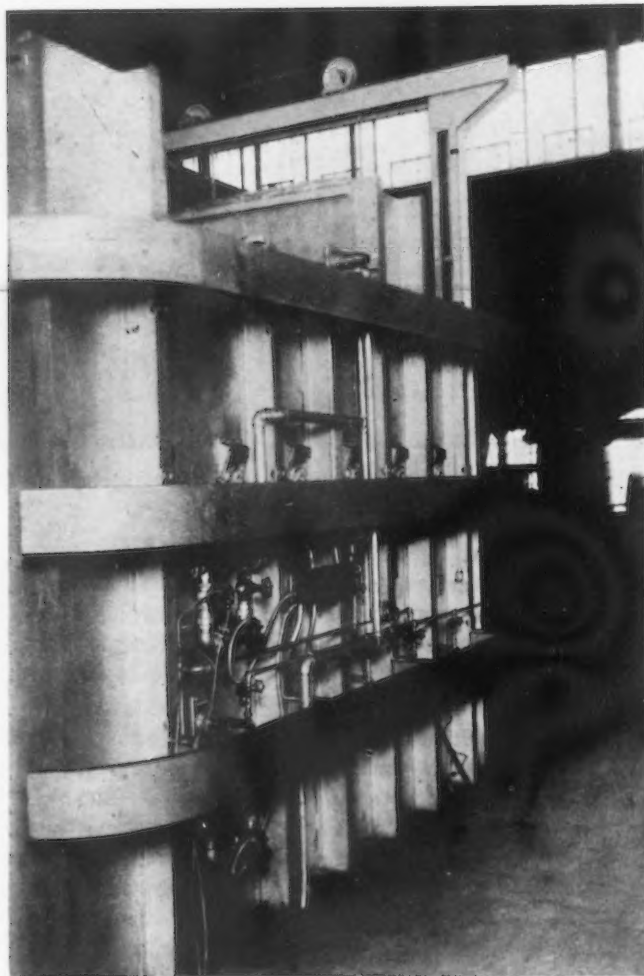
Far be it from me to belittle the efforts that are being constantly made. We need improvement; we need welded structures of these alloys. But the improvements we shall make will be more particularly in the alloys than in the equipment designed for their fabrication and of this we already have decided indication.

The entrée of the chrome-nickel types of material, so commonly referred to as 18 and 8, has perhaps offered the widest step in the advancement in the art of welding that has been made since the discovery of these corrosion resistant alloys. Is not the introduction of nickel responsible for this? The addition of nickel has produced substantial physical and metallurgical changes in the material. We have, instead of a martensitic or ferritic type of chrome alloy, a substantially austenitic material, a material in which grain growth is not quite so marked, so that at one stroke we have eliminated many of the problems of the straight chromium alloys. We have a material that is non-hardening; the introduction of the weld metal theoretically does not produce a different metallurgical condition.

In other words the weld metal would be austenitic and the material either side of it would be austenitic so that we have similarity not only chemically but metallurgically. We do, however, have a difference between cast structure and wrought structure, and heat treatment will not entirely eliminate this.

Earlier in this article I mentioned that a slight difference in physical condition, when the chromium was over 16 per cent, could in some cases be disregarded and this is true in many cases with the 18 and 8 series. It would seem, therefore, from this statement that 18 and 8, as a type, is a step in a logical direction and from this point on we could without hesitation proceed to manufacture welded structures from the chrome-nickel alloys.

However, we are not entirely free from difficulties
(Concluded on page 983)



Gas firing system with automatic temperature controls for heat-treating furnace. The parts are thoroughly protected from damage, by heavy bumpers. ▲ ▲ ▲

CAST STEEL CRANKSHAFTS HAVE HIGH QUALITIES

By H. M. HEYN

Assistant Sales Manager, Surface Combustion Corp.,
Toledo, Ohio



EVER since crankshafts, connecting rods, etc., have been used, hot forging has been the process by which they were manufactured. A distinct departure from this time-honored method has been made, however, by at least one manufacturer of these items, and a material betterment in product is said to have resulted. The new method employed is that of casting a special-analysis alloy steel.

A complicated and most precise, triple-heat treatment imparts to the casting better physical properties than can be obtained with forging and heat treating, it is asserted. It has also been made possible, by using castings, to redesign the parts so as to increase the strength at the customary weak points and lighten the structure as a whole. Furthermore, with the new designs, the castings were found to be better adapted to the uses to which they were put, but this redesign is not possible of attainment in the forging in die process.

This pioneering has been done by the Industrial Steel Casting Co., Toledo, Ohio. This company is successfully making cast crankshafts and connecting rods for two of the world's largest manufacturers of pumps. The

company has enjoyed marked success also in the manufacture of alloy cast steel heads for Diesel and semi-Diesel engines.

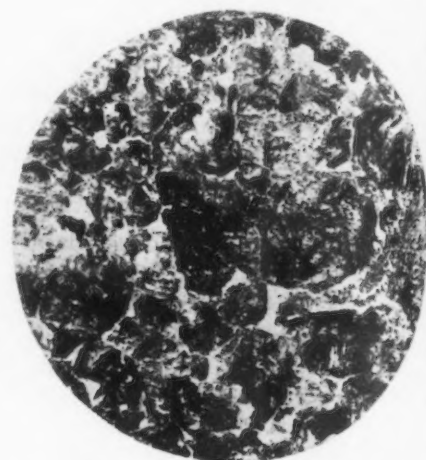
A nickel-manganese steel with the following chemical ranges in analysis is used:

	X-18	X-19
Carbon	0.344	0.340
Manganese	1.61	1.67
Silicon	0.69	0.61
Phosphorus ...	0.034	0.037
Sulphur	0.039	0.040
Nickel	0.73	0.70

The heat treatment of these castings is a special one developed in the company's research laboratory, as was the alloy steel. It is quite involved and is divided into three distinct treatments. All temperature and heating periods must be held within extremely narrow limits. This particular alloy steel readily lends itself to different heat treatments and a few of the resultant physical properties are noted:

	X-18	X-19
Yield point.....	67,500	51,000
Ultimate strength	101,750	90,000
Elongation in 2 in., per cent...	22.6	28.5
Reduction of area, per cent.....	53.5	41.5
Brinell hardness.	192	187

Carefully kept records of the history of every casting enable customers to trace each piece to the heat from which it was produced. This record starts with the details of the heats, the chemical and physical properties, and the micro-photographs of the grain structure. All of these tests



Photomicrographs showing the cast steel as cast magnified

▲ ▲ ▲

AN unusual method of making crankshafts for pumps is by means of castings of special alloy steel. Use of a complicated heat treatment is reported to give these members all the strength they need. In addition, they have enough ductility to take care of the inevitable shock.

▼ ▼ ▼



▲ ▲ ▲ **L**OADED car of parts going into heat-treating oven. Sand seal protects the running gear of the car from the heat.

are made before the castings are shipped.

Accompanying each shipment of the higher-quality castings is a card bearing analysis, heat number and photomicrographs of the grain structure. All castings are guaranteed to come within a very small variable tolerance in their physical properties.

For the heat treatment of the castings three furnaces are in use. Each furnace is heated with a different fuel: gas, oil and electricity. All of the furnaces are of the car-bottom type, with the same brick and steel construction. They differ in their capacities, the gas furnace holding a

charge of 12 tons, the oil 8 tons and the electric 5 tons.

The gas-fired furnace was designed and built by the Surface Combustion Co., Toledo. Outside it is 18 ft. long, 10 ft. wide and 10 ft. high, and it has a single counter-weighted door in front. The tracks on which the car operates are led into the furnace through this door. The car is pulled in and out by means of an overhead crane and cable. The car top, which forms the hearth, is provided with a sand seal, so that the heat of the furnace cannot penetrate below to the trucks. At the same time the compartment which contains the trucks is open in front for the free circulation of cold air from the outside, to eliminate any heat from radiation.

The Surface Combustion system of firing is employed, 12 two-stage, high-pressure velocity-type gas burners being located along each side, making 24 in all. Half of these are placed well down, close to the hearth, and the others in the upper portion of the walls, which assures uniformity in heat distribution.

Atmosphere Regulated by One Valve

All burners are manifolded to venturi-type inspirators, gas being furnished at a pressure of 10 lb., which inspirates air for combustion. This setup permits any ratio of gas and air, so that the furnace atmosphere can be regulated to suit the circumstances by a single valve. Once set, this ratio is automatically maintained, regardless of the volume of combusti-

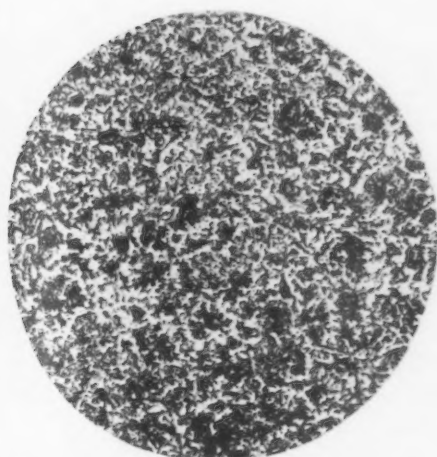
ble mixture passing through the burner ports. In this case a slightly reducing atmosphere is required and provided.

This furnace has two automatic temperature controls, connected with motor-operated valves in the gas supply lines, and two thermo-couples in the heating chamber, one extending into the charge from the roof of the furnace, the other into the center of the load from the side. The valves are of the on-and-off type, i. e., when the temperature runs above the degree set on the control instrument, they automatically shut off the gas supply; conversely, when the heat drops below this point, they open again. These temperature control instruments also record and they operate between temperatures of plus and minus 5 deg.

Waste products of combustion are vented through a series of flues built into the walls of the furnace and which terminate at the two main flues. These flues have motor-operated dampers, which close automatically when the burners are shut off, so as to prevent entrance of cold air to upset the heat cycle and atmosphere.

Production of steel barrels in August declined to 449,590 from 580,565 in July and represented 31.6 per cent of capacity as compared with 40.7 per cent, according to reports received by the Bureau of the Census from 27 establishments.

The Iron Age, October 8, 1931—939



(at left), and after treatment (at right), both 100 diameters.

steel as cast magnified

CAST IRON PAVEMENT LAID IN LONDON

LONDON, ENGLAND, Sept. 16.—A section of iron paved highway has been laid on the Romford Road at Stratford, a suburb of east London, by a company recently formed under the name of Iron Roads, Ltd. The paving consists of triangular sections of iron cast in a lattice design and laid on a foundation of concrete, which is protected by a bituminous float providing a cushion to minimize vibration being carried to the foundation.

The cast iron segments are bonded together with a ferromastic, to insulate the foundation from abrasive action. The traffic load is said to be efficiently distributed, as the superficial area of each iron section is greater than in the usual road surfacing. Each section is self-setting when laid, rocking of the blocks being eliminated by providing a three-point suspension.

It is claimed that the blocks may be laid rapidly, as they align themselves on their three-point supports, and with rapid setting of the mastic used for bonding, traffic may pass over a newly-paved roadway almost as soon as completed. Each triangular block is laid so that it has no contact with another, the space being filled by the mastic.

To permit the edge to conform with the road track, left and right-handed sections are cast in addition to the main surfacing of equilateral triangles. Strong ribbing supports the top surfacing of the roadway, and the castings under test withstand a crushing pressure in excess of 8 tons per sq. in.

Apropos of the foregoing, it will be of interest to reprint an account in these columns 54 years ago of an early experiment in iron road work.

Iron Paving Tried by London in 1877

(From *The Iron Age* of Aug. 23, 1877)

BY permission of the Commissioners of Sewers of the City of London, a portion of the new wood paving in Beech Street has been charged with iron (3 cwt. to the square yard) by way of experiment. The object is to increase the durability of wood and preserve and protect it from heavy racking traffic, and to test the practicability of securing small blocks of iron without framework, and so deaden the noise and counteract the

▲ ▲ ▲
AFTER driving the first motor car over a new section of cast iron highway in a London suburb, Frank Hough, of Iron Roads, Ltd., stated to a representative of *The Iron Age* that he had made every effort to skid, but without success.

other disadvantages of metal, as hitherto applied.

The ordinary wood paving blocks are beveled by machinery on the upper and lower edges, and between each row is laid a row of cast iron blocks of double wedged section, thicker at the upper and lower surfaces, than in the center, so as to fit mechanically between the beveled wood blocks, which on section are thicker in the center

than at the upper and lower surfaces.

The iron blocks weigh 16 lb. each, are rounded and serrated on surface for foothold, and are imbedded in sand on the ordinary concrete bed. The designer and patentee, Mr. Denison (a London architect), states that the cost, though heavy at first, will not in the long run exceed either granite, wood or asphalt.



Pig Iron Imports Cut in Half

Imports of pig iron into the United States in August are reported by the Department of Commerce at 3122 gross tons. This is just 2 tons less than one-half the July imports of 6148 tons, and shows a drop of 64 per cent from August, 1930. The movement is the smallest for any month since March, 1922.

British India sent just about one-half of the total, holding a lead which

has been customary for some time. Canada was our second largest source, which is contrary to the usual experience, as Canada stands fifth in the eight-month period and was sixth last year.

In eight months 65,093 tons has come in, a decline of 19 per cent from 1930, and the smallest for the period since 1922. India furnished 78 per cent of the total, against 75½ per cent last year. Netherlands, Sweden and Britain followed, in that order, whereas in 1930 the order was Britain, Netherlands, Norway and Sweden.

United States Imports of Pig Iron by Countries of Shipment

	(In Gross Tons)			
	August		Eight Months Ended August	
	1931	1930	1931	1930
United Kingdom.....	15	.....	2,306	7,148
British India.....	1,555	7,746	50,580	60,497
Germany.....	.....	.....	52	50
Netherlands.....	50	.....	6,245	5,712
Canada.....	1,094	160	1,231	392
France.....	.....	.....	25	.....
Belgium.....	.....	100	300	100
Norway.....	200	.....	174	2,781
Sweden.....	38	50	3,327	2,608
All others.....	50	589	853	768
Total.....	120	102	65,093	80,056

CLOSE ACCURACY MAINTAINED IN MAKING LARGE 855-HOLE PIERCING DIE



THE 13½-in. x 36-in. x ⅛-in. stamping here illustrated will be recognized at sight as unusual. It is noteworthy not only for the number of holes, but also for the accuracy to which the multiplicity of holes was held and the speed of accomplishment. It also reflects progress in die making.

In this stamping, which is for use in a voting machine, there are 855 holes, and the same number were required of course in the punch, die and stripper. In addition there is a gage for checking the stampings as they come from the press, so that, in all, 3420 holes had to be laid out and finished in making the complete die and the gage for this job. The punch, die and stripper were made in seven sections, as shown.

It is to be noted that the holes for the punches were not spotted through the die, but were located and bored separately on a jig boring machine. The stripper and die were likewise bored separately. The gage was made in one piece on a larger jig borer.

The accumulated error from the outside hole at the one end to the extreme hole at the other was held to 0.002 in. The same tolerance was specified for the outer holes across the die, but the accumulated error was

actually much less. With these limits specified it will be seen that each of the 3420 holes had to be held to an accuracy of the order of tenths of a thousandth.

A further requirement in producing this intricate die, with its "forest" of punches, was die making at a rate that would keep the cost within reasonable limits for accurate work on a large scale, a competitive consideration for the maker of the die and gage, the B. Jahn Mfg. Co., New Britain, Conn. The B. Jahn company furnished this and other dies for the pressed metal division of the Stanley Works, New Britain, which is supplying the stampings for the voting machines.

The holes in the stamping range from 0.093 to 0.250 in. In this connection it may be pointed out that the smaller diameters violate the old rule of thumb method that the hole di-



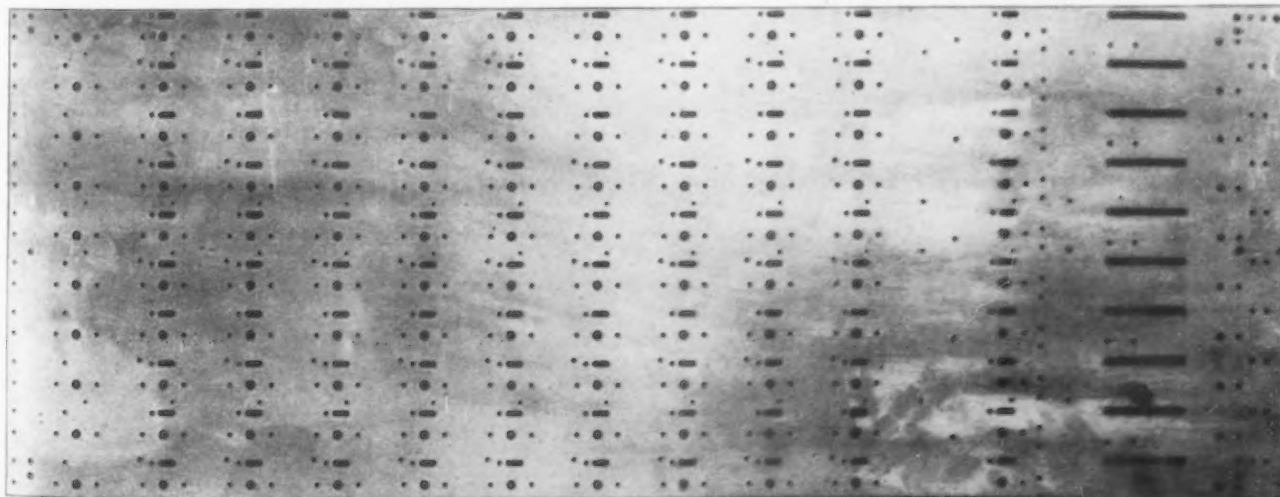
THIS stamping is 36 in. long, 13½ in. wide and ⅛ in. thick and has 855 holes. Used in a voting machine, it is held to an accuracy of 0.002 in. between extreme holes. The complete die and gage for this stamping required the laying out and finishing of 3420 holes.

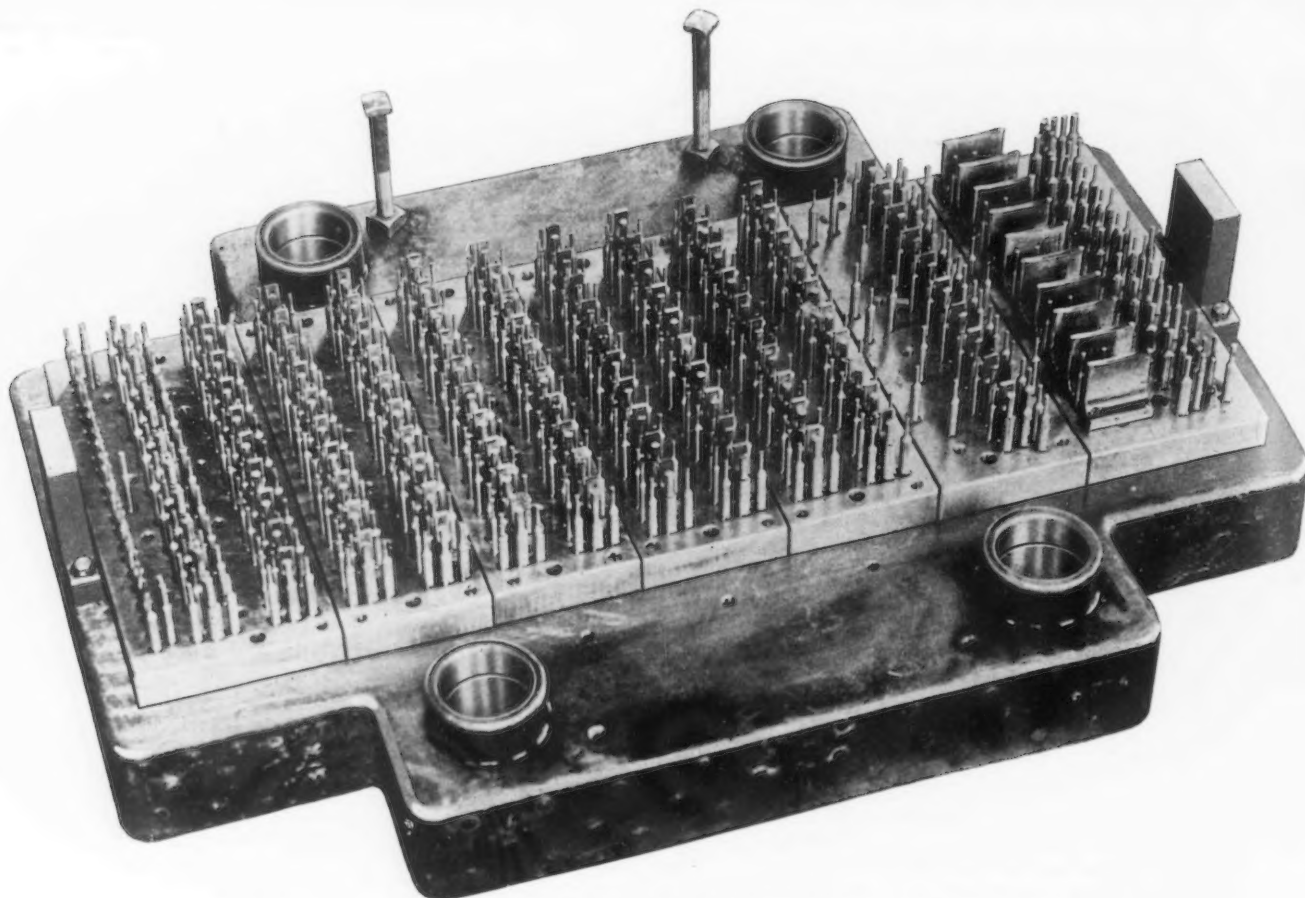
ameter must at least equal the thickness of the stamping, which in this case is ⅛ in. Notwithstanding, the stamping produced by this die is clean and accurate, without burrs. The two sizes of slots are about 5/32-in. wide, and are 2½-in. and ¾ in. long, respectively.

Stripper Plate Oil Hardened and Tempered

The punch member was made of tool steel, the punches are of drill rod and the die of oil hardening steel. The stripper plates were oil hardened and tempered. The gage is machine steel, and the gage pins or plugs are made of drill rod, hardened and ground.

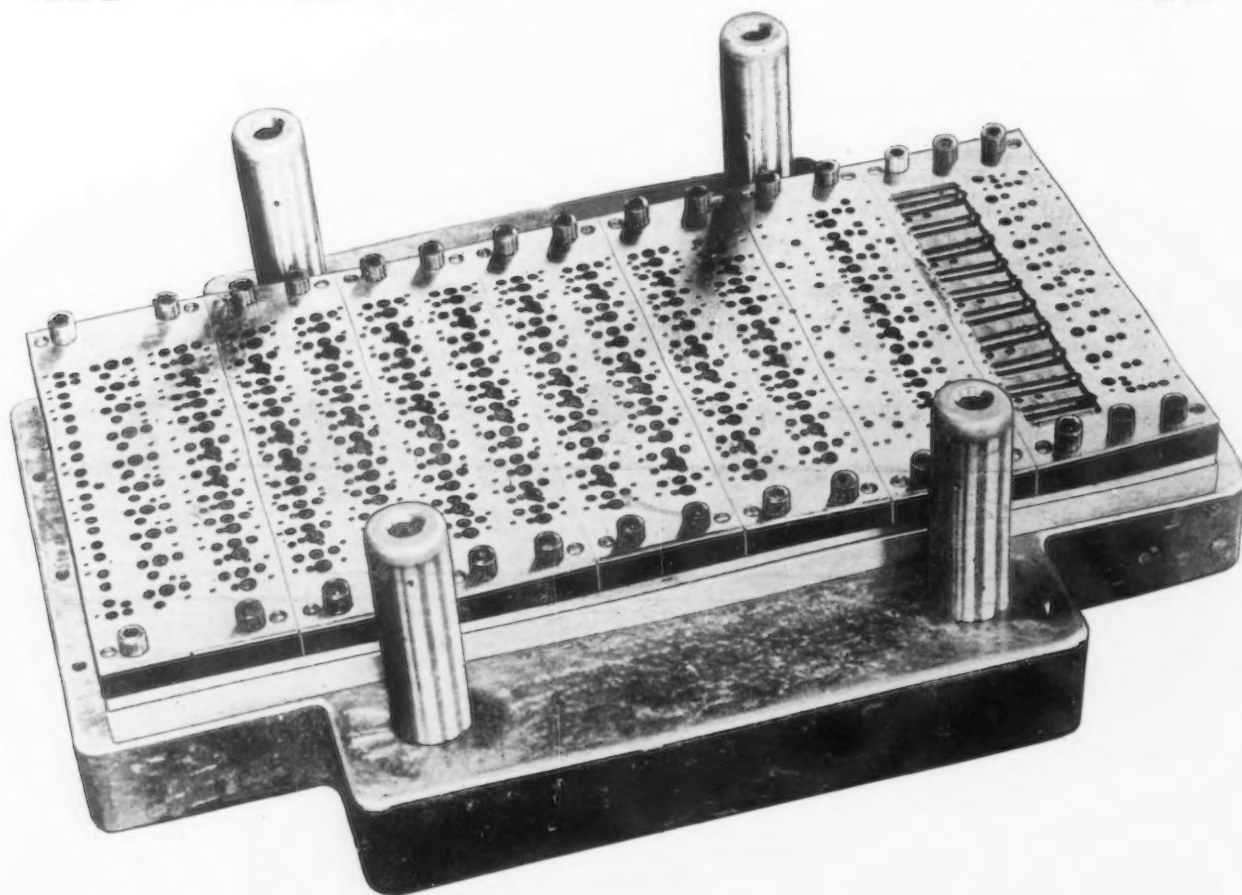
All holes were located, drilled from the solid and then single-point bored on a jig borer. The slots were made by locating and boring the end holes, then sawing out the metal between the holes and finishing by filing. The holes in the gage, which was made in one piece, had to be very accurately located and bored to receive the gage plugs, the diameters of which were made 0.002 in. smaller than the holes in the finished stamping to facilitate the gaging process. Use of the gage on every stamping is considered necessary because in the forest of punches, immediate detection of worn or dam-

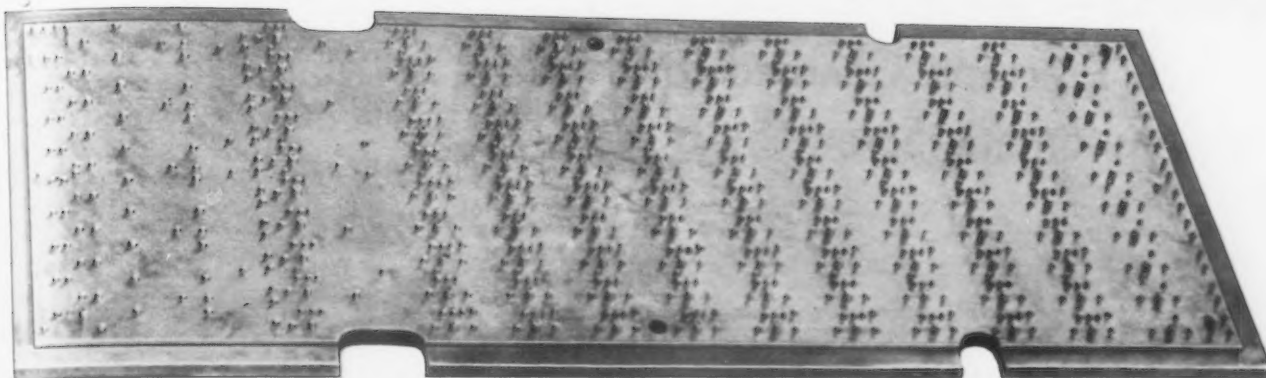




▲ ▲ ▲ HOLES for the punches were not spotted through the die, but were located and bored separately on a jig boring machine. When the die was finished, the two halves went together without the stoning of a single punch. ▲ ▲ ▲

▲ ▲ ▲ THE stripper plates only are shown in the view below, the die plates being underneath. This stripper is made of oil hardened and tempered steel. ▲ ▲ ▲





Each stamping is gaged; to facilitate the process the gage plugs were made 0.002 in. smaller than the holes in the stamping. The first stamping made dropped over the gage plugs very satisfactorily, thus proving the entire job.

aged ones would otherwise be difficult, if not impossible.

When the die was finished and the trial piece made, the two halves of the die went together without the stoning of a single punch, and the first stamping dropped over the gage pins very satisfactorily, proving the whole job. The weight of the die complete is 2700 lb.

Jig Borers Permit Rapid Locating, Machining and Checking

For the locating, drilling and boring operations, three Pratt & Whitney jig borers, two No. 1A and one No. 2, were employed. It will be readily seen that without jig boring machines the making of this die and gage with the great number of holes and close accuracy required would have taken an inordinate amount of time, if it would have been practicable at all.

As pointed out in previous descriptions in these columns, the Pratt & Whitney jig borer is in effect a com-

bination of two units, a measuring machine and a precision vertical borer. As a measuring machine it is capable of originating, duplicating and checking its own measurements to 0.0001 in. Dimensions are set on the machine exactly as they appear on the drawings to which the operator is working. Holes are located by end measures, inside micrometers and dial indicators—tools with which the tool-maker is familiar. Any movement of the table and work, however slight, is indicated on the dials, which are always in full view of the operator. Traversing screws are used only for moving the table, which may be done rapidly.

Rapid production of the intricate die here shown is attributed to facilities for simple set-up, rapid locating and boring, and the quick, visible, direct checking to 0.0001 in. of each hole as it is finished.

Set-up of the work is facilitated by the large table and the open-side con-

struction, with good visibility. Each piece making up the various members of the die had finished edges and from these edges the first hole in each piece was located, using a proving bar in the spindle.

In the rapid locating of the holes lies, perhaps, one of the greatest advantages of the machine equipment, the time required for the locating being but a small fraction of the finishing time. With the skilled operators employed by the B. Jahn company, this operation required only the minimum of time.

Holes were located by two dimensions at right angles, a separate measuring device consisting of end measures for the even inches, inside micrometers for fractions of an inch and a sensitive dial indicator which reads in 0.0001 in. being provided for the cross and longitudinal movements of the table, respectively. After locating the spindle over the first hole, the measuring instruments and the dials

(Concluded on page 983)

For making the piercing die and gage for the voting machine part three Pratt & Whitney jig borers, kept in a separate locked room, were employed. This jig borer is in effect a combination measuring and precision boring unit and is capable of originating, duplicating and checking its own measurements to 0.0001 in. Dimensions are set on the machine exactly as they appear on the drawings to which the operator is working.



High Precision Claimed for New Automatic Screw Machine

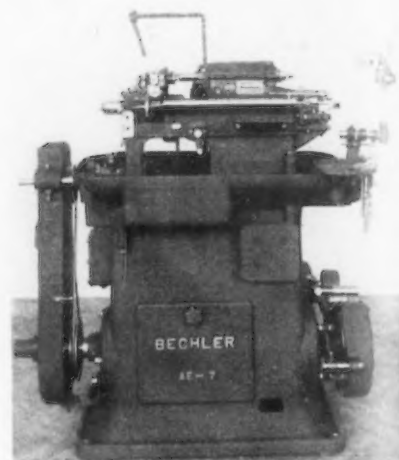
PRECISION to 0.00025 in. for both diameter and length of work produced, fine finish obtained, and capacity to handle long and complicated pieces in a single operation are claimed for the new Bechler universal automatic screw machine which has been placed on the American market by the Triplex Machine Tool Corp., 50 Church Street, New York. Three sizes, with bar capacities of $\frac{3}{8}$, $\frac{1}{4}$ and $\frac{3}{16}$ in. by 2 $\frac{3}{4}$ in. long are offered.

Double micrometer adjustments are furnished for setting the tools. There are four tools in all, none of which has longitudinal travel; instead, the bar stock is carried past the tools by the headstock which advances and recedes intermittently along a slide. At the same time the tools feed alternately into and out of the work. These combined movements of the headstock and tools are said to permit a wide variety of pieces to be made. When the headstock spindle collet opens, the bar is pushed through a fixed steady-bushing in front of the headstock for supporting the work during the cut.

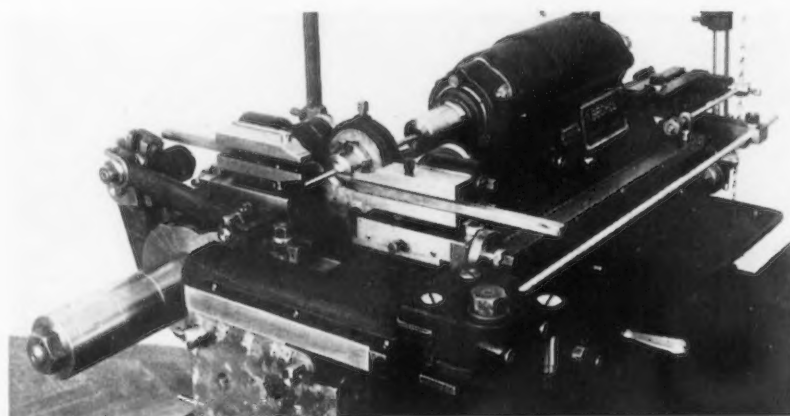
The two horizontal tools are fixed on a swiveling carrier operated by a cam that actuates the alternate feeding mentioned above. The front tool usually is arranged for longitudinal turning while the back tool

does the cutting off. Two vertical tools, not shown in the illustrations, can be set for forming, knurling, re-cessing and other operations.

On the motor-driven machines 88 camshaft speeds are available; this is emphasized as permitting selection of the exact speed required for various types of work and makes for high production. More than 30 attachments can be furnished as required for standard and deep-hole drilling, short and long threading and tapping, taper turning, etc. All attachments and cams are interchangeable on the three sizes of machines.

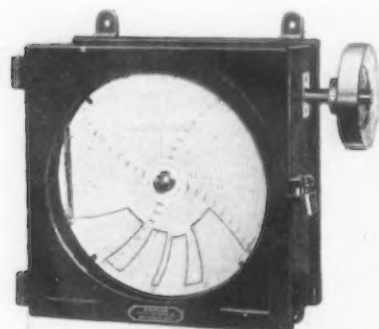


CLOSE-UP view (below) of screw machine with attachments for turning accurate taper pins; two vertical tools can be used in addition to the horizontal tools shown.



Recording Device Checks Production Losses

TO facilitate tracing and checking of production losses a recording instrument that provides a continuous chart of the entire operation of the machine on which it is installed is offered by the Amthor Testing Instrument Co., 309 Johnson Street, Brooklyn, N. Y. The round chart can be graduated to record any specific unit



OPERATING and idle machine time are recorded by this instrument; the chart can be calibrated to read directly in units suitable for the machine to which it is applied.

of output which is a function of, or depends on, the speed or rate of production of the machine. The recorder shows the speed or rate of production and every change in speed, as well as starting and stopping times, slowdowns, non-productive periods and the actual producing and idle time.

The recorder movement is based on the centrifugal principle; the motion of governor is transmitted directly to a pen arm by connecting links. A damping device eliminates excessive vibrations of the pen arm and precision ball bearings prevent wear. The chart is driven by a standard clock movement to give a 12 or 24-hour record as specified. The driving shaft can be located at either the side or back of the instrument. Connection with the machine can be either through belt, coupling or flexible shaft.

It is pointed out that the recorder can be used in connection with virtually any type of industrial plant machinery; suggested uses include recording of operating regularity of power plant turbines, the feeding rate and regularity of stokers, and the speed of blast-furnace blowing engines.

Stoneware Acid Pumps Are Redesigned

CERAMIC-LINED centrifugal pumps of improved design for handling acids have been placed on the market by the U. S. Stoneware Co., 50 Church Street, New York. This new series, designated as the No. 520, is provided with semi-automatic gland adjustment and a double packing gland that prevents spraying. Constant gland pressure is maintained by a temperature compensating device. Metal parts that might be injured by acid fumes are made of special corrosion resistant alloys.

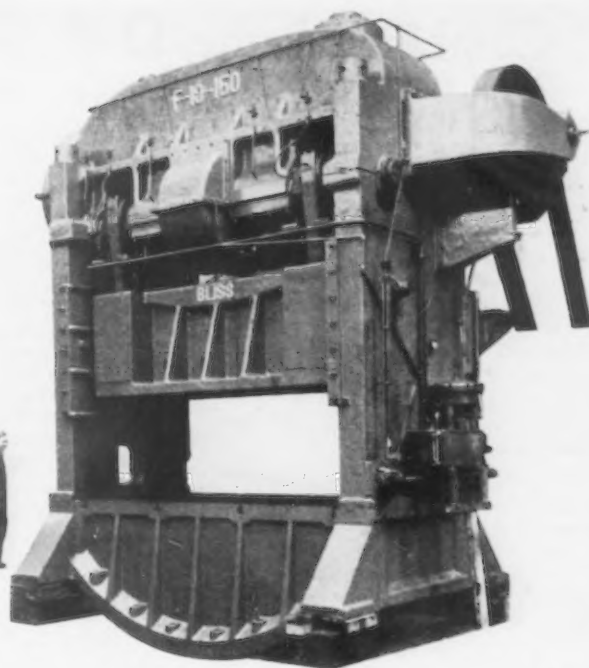
All parts are standardized and any wearing part can be removed easily. Instead of being cemented, all stoneware parts are ground into the protecting armor. A dual impeller is employed, providing gland relief. The impeller clearances are adjustable and adjustment of the Timken bearings is possible without altering the impeller alignment. Less floor space is required for the same pumping capacity as compared with the company's former models. Overall efficiency is claimed to be equal to that of water pumps of similar size.

Four-Crank Press Adapted for Unsymmetrical Dies

UNSYMMETRICAL dies, such as some of the larger ones used in automotive work, often put the center of pressure well away from the center of the press; this strain is especially severe when the off-center load is concentrated in front or in back of the vertical plane of the shaft. To overcome this condition the press illustrated has been developed by the E. W. Bliss Co., Brooklyn, N. Y. This press is of the four-crank or four-point suspension type, having two double-crank shafts which, geared together to revolve in step, distribute the pressure of their four pitmans to the four corners of the slide. By this distribution of effort, the gibs are relieved from restraining any tendency of the slide to tip, and have only to withstand purely lateral forces. The crankshafts revolve in opposite directions; in this way lateral forces on the slide, due to angularity of connecting rods, cancel each other.

The pitmans or connections driving the slide are not adjustable; slide adjustment is effected through four screws attached to the sliding wrist blocks which are fitted to bored holes

THE tie rods pass outside the shafts through broad uprights. To provide further stiffening, openings for heating the tie rods are cored in the bed instead of the uprights.



in the slide. The nuts for the screws are rotating members geared back to an adjusting motor on the slide. Special means are provided for locking this adjustment.

Other features are special frame stiffening, herringbone driving gears and a circulating lubrication system.

Specifications include: distance from bed to slide, stroke down, adjustment up, 36 in.; stroke, 10 in.; adjustment of slide, 6 in.; area of bed, 150 in. left to right, 70 in. front to back; area of slide, 138½ x 60 in.; distance between uprights, 150 in.; floor space, 250 x 142 in.; net weight, 250,000 lb.

Honing Machine Finishes Large Motor Cylinders

HUTTO ENGINEERING CO., Detroit, has announced a new finish-grinding or honing machine for heavy work, such as large truck, airplane and marine motors, Diesel engines and compressor cylinders. The machine, designated as model MV500, will accommodate bores from 1½ to 8 in. diameter and up to 15½ in. in length. By using special grinders made by the company, bores up to 18 in. long can be finished.

Four reciprocating and two rotating speeds are provided by a vertical motor equipped with a remote-control automatic starter. The head can be raised or lowered by a convenient crank and locked at any desired height. The driving spindle telescopes to permit extraction of the grinder from the bore without disturbing the setup. Access to the stroke adjustment mechanism is through the front plate which is held in place by four wing nuts.

High grade ball bearings are used throughout, with the exception of the spindle bearing which has a phosphor bronze bushing. Coolant from a 45-gal. reservoir is circulated by a motor driven pump. A self-lubricating system makes for smooth and quiet operation.

The helical gears are grease lubricated and require little attention. Simplicity and compactness are features emphasized for the vertical construction. Floor space required is 54 x 40 in.



Protective Paint for Steam Pipe

PROTECTIVE paint designated as Pipe-Kote 505 for use on steam and hot water pipe lines has been placed on the market by the American District Steam Co., North Tonawanda, N. Y. It is said to be impervious to any degree of heat generated by steam, practically immune to the action of moisture, dilute acids and alkalis, and sufficiently elastic to expand and contract with the pipe without cracking or peeling. The paint is offered also for use on gas mains, stacks, boiler fronts, bridges and other surfaces exposed to extreme or rapid changes of temperature and atmospheric conditions.

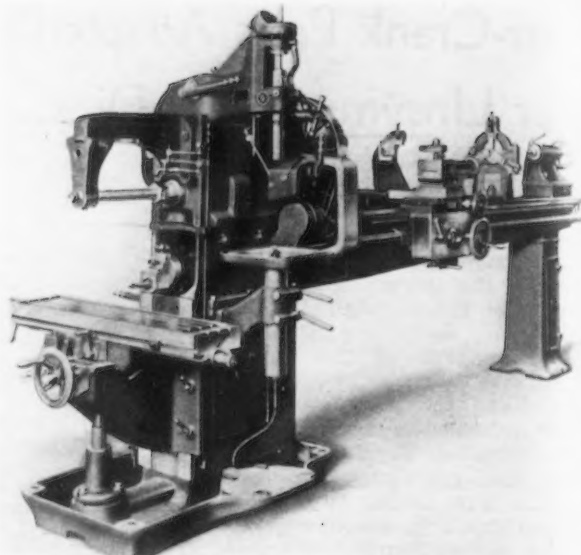
The first of a group of memorials to perpetuate the memory of the founders of Hartford industries was recently unveiled at the Connecticut trade school in that city. The group includes bas-relief portraits of eight pioneer industrialists prominently identified with interchangeable manufacture. The memorials are sponsored by a committee appointed by the Manufacturers' Association of Hartford. Samuel M. Stone, president, Colt's Patent Fire Arms Mfg. Co., is committee chairman.

Combined Lathe, Drill, Shaper and Miller

LATHE, drill press, milling machine and shaper are incorporated in the Krause universal combination machine tool placed on the market by H. A. Weaver, 8845 Livernois Avenue, Detroit. Model UM-2, here illustrated, is suitable for use in general workshops, on shipboard, in power plant repair shops, garages and hangars. Its dimensions have been chosen to permit refinishing crankshafts and cylinders.

Three units—lathe, drill press and either the shaper or miller—can be operated simultaneously. Each unit is independent as to drives, controls and working speeds; it is possible, for instance, to take heavy cuts on one unit while the other two are doing light work at high speeds. The lathe, drill press and shaper units are on the same level, with the result that there is no twisting strain. A friction

SIMULTANEOUS operation of three units is possible; independent controls for each machining element are conveniently located



clutch is incorporated in the drive.

Drive can be through countershaft from motor and belt, or by direct-connected motor. A coupling brake on the drive shaft can be used to stop the entire machine quickly.

Variable Speed Drive Using V-Belts

VARIABLE-SPEED CONTROL is provided by a multiple V-belt pulley made by Hammond Machinery Builders, Kalamazoo, Mich., for use on its grinding, polishing and buffing machines and for application to other equipment where 15 hp. or less is to be transmitted. With this device the peripheral speed of grinding wheels may be held constant despite reduction of the diameter by wear. By occasional adjustment of the pulley, for example, a surface speed of approximately 9500 ft. per min. can be maintained on a 24-in. grinding wheel until the diameter has worn down to 13 in.

Variation of speed is possible within a range limit ratio of $1\frac{1}{3}$ to 1, or greater if more than one adjustable pulley is employed. Changes in speed are effected by expanding or contracting the diameter of the driven sheave, made possible by the segmental construction of the pulley. As may be seen in the illustration, these segments engage at their inner ends with a scroll thread. The view at the right shows the pulley fully contracted; in this case a speed of 2800 r.p.m. would be obtained with a 1750 r.p.m. driving motor. With the sheave 75 per cent expanded as shown in the left-hand view, the speed would be reduced to 2000 r.p.m. with the same driving speed. The maximum speed recommended is 3000 r.p.m.

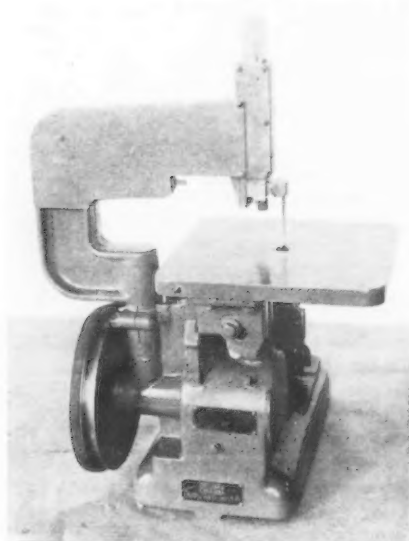
Improved Die Making Machines

REDESIGNED die-making machines announced by the Oliver Instrument Co., Adrian, Mich., incorporate improvements intended to increase efficiency and ease of operation. The type S-4 machine illustrated is motor and belt driven, arranged for

per ram is made of tool steel and is actuated through a bellcrank and heavy coil spring that provides a proper uniform tension on the saw. The overarm can be swung away from the file to remove the die for inspection and quickly returned to the operating position. It is not necessary to remove or loosen the file in the lower clamp in order to inspect the die. No hold-down brackets or file rollers are required; hold-down fingers are attached directly to the overarm and the working surface of the table is entirely clear.

The new chuck used for holding saws, files and lapping sticks comprises a solid and a movable hardened jaw clamped by a screw. The chucks on lower and upper rams are accurately aligned. Rapid and accurate work and virtual elimination of saw breakage are claimed.

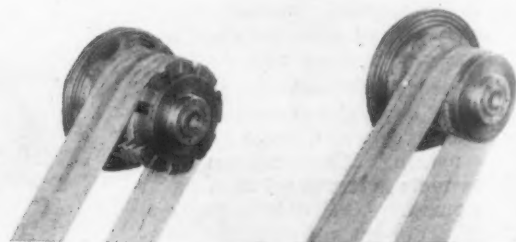
Steel Founders' Society of America, Inc., has scheduled the following meetings: Oct. 22, Hotel Roosevelt, New York; Dec. 10, Hotel William Penn, Pittsburgh; Jan. 21, 1932, annual meeting, Chicago.



bench mounting. Its table, of heavy construction, is supported on two brackets and tilts in four directions; the working surface is accurately ground.

The overarm is used for both filing and sawing; the upper end of the file or saw is clamped to a ram which reciprocates in rigid bearings. This up-

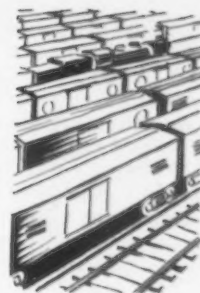
THE diameter of this adjustable pulley can be altered to vary the speed of the driven machine.





Early Decision Is Expected on Plea for Higher Freight Rates

Interstate Commerce Commission Holding Conferences—Favorable Outcome Might Result in Release of Orders



WASHINGTON, Oct. 6.—Conferences being held by the Interstate Commerce Commission on the emergency plea of the railroads for a general 15 per cent advance in rail rates indicate that it is seeking to reach an early decision. This is in line with the policy of the commission announced from the outset to expedite the case.

To this end Chairman Brainerd called the commission into special conference on Thursday of last week, one day after the case was submitted. Other meetings have been held and will be continued until the commission has reached a determination.

Because of the quick action in going over the volume of testimony, briefs and arguments, currently abstracted, some forecasts are made that the commission will hand down an opinion within a week or 10 days. Other predictions place the time at the end of the month, and still others at a further date.

While prophecy of a decision at an early date may be safe, it is also a fact that the predictions are only guesses. And since the javelin is hurled from day to day, it may be that one of the guesses may hit the mark. The dates of Oct. 17 and 24 are popular in the speculation for an imminent decision because they fall on Saturday, when the Stock Exchange is closed. Still, the commission frequently hands down decisions at 3.30 p. m. on other days when the Stock Exchange also is closed and it would therefore seem it could be announced at that hour as well as on Saturday so far as the effect on stocks and securities is concerned.

Commission Said to Be Divided

It is likewise to be assumed that the commission itself cannot know either the time or nature of its decision until it has completed study of the case and its conferences. While the commission is represented as being divided in its views, it is maintained no member will close his mind and arrive at a fixed opinion until he is satisfied that he has given careful consideration to all factors.

Reports as to the character of the decision are even more widely divergent than those relating to the time it will be handed down. Like the testimony and arguments, these reports are decidedly conflicting.

Witnesses and attorneys for the railroads and for interests holding railroad securities sought to build their case on the contention that the carriers face an emergency situation and that net returns have almost reached the vanishing point. They emphasized that the railroads are not getting a "fair return" on capital investment as provided by law, and that the commission is required to prescribe rates which will permit such a return. Unless this is done, it was contended, and especially by attorneys for holders of rail securities, the railroads would face bankruptcy.

At different times also the commission was told that unless increases were granted the railroads would be forced to reduce wages. Railroad attorneys themselves, however, carefully refrained from directly discussing this point, a question which the commission at the beginning of the case had ruled out of consideration. In answer to the reiterated views of shippers protesting increased rates that if they are advanced there will be further diversion of traffic to competing lines of transportation, with resulting loss of revenue to the rail carriers, contention was made on behalf of the latter that claims of diverted traffic had been exaggerated. It was argued that even if some traffic was lost to trucks, water carriers and pipe lines, the railroads alone are the only suitable means of transportation for much traffic and that increased rates on the latter would develop revenue greatly in excess of any loss. It was held it would go a long way toward raising the additional \$400,000,000 annual revenue which the carriers are seeking.

Say Industry Cannot Stand Higher Rates

Testimony and arguments for protesting shippers frequently differed to some degree. But, on the whole, common views were expressed. Prominent among them was the point that the railroads did not "make a case." Some attorneys for shippers said that the railroads left the commission "high and dry" because they failed to establish a basis for their plea. While it was conceded railroad earnings are at a low point, it was pointed out that industry generally is in the same or worse position and, as a whole, cannot endure the burden of higher rates.

The requirement that the commission shall prescribe rates which will provide a fair return on railroad capital invested was interpreted as being of a permissive rather than a mandatory character. It was declared that it would be impossible under existing conditions of business depression to carry out such a mandate simply because the traffic is lacking. In insisting that a substantial volume of present rail traffic would be diverted to other lines of transportation if the increases were granted, some attorneys implied that actually the view is shared by some rail executives and is more widely held by their traffic departments. The contention likewise was made that, whatever may be the interpretation of provision for rates to provide a fair return on railroad capital, the law also requires that the commission must prescribe rates that are just and reasonable. In this connection it was stated the railroads did not even attempt to show that the present levels are not just and reasonable. Insistence was made that this showing was necessary before the railroads could establish a case, regardless of whether it was an emergency or ordinary rate proceeding. Frequent charges were made also that the railroads are engaged in wasteful transportation and that by its elimination they could greatly improve their financial structure.

Wasteful Transportation Charged

This was one of the chief points made by Attorney E. S. Williamson, appearing for the Newport Rolling Mill Co., Newport, Ky., the sole steel representative to present an argument, the other steel attorney, W. W. Collin, Jr., having canceled the appearance he was to make for the Jones & Laughlin Steel Corp.

In charging the railroads with wasteful transportation, Mr. Williamson dwelt particularly upon what he called an abnormal increase in empty freight train miles, which he said began in 1923 and also on what he termed unprofitable passenger train service. Apparently, he said, the railroads will have to work out some plan under which empty freight train car-miles may be materially reduced. He suggested that some help in this direction would be brought about by consolidation of the carriers. By coincidence or otherwise, Trunk Line carriers renewed a plan of consolidation

two days after arguments were concluded. Discussing passenger service, Mr. Williamson said it would seem to be the duty of railroad executives to eliminate every unprofitable passenger train that can be reasonably eliminated and pool revenue from the trains retained. He also suggested a thorough study of the passenger service, to deal with numerous phases, including pay given the railroads for handling mail.

Charts were presented by Mr. Williamson to support his contention that at the beginning of the present depression the railroads were in a vastly better position both physically and financially than they were at the beginning of the 1920-1921 depression. Carriers as a whole, he said, entered 1931 in first class physical condition, with a surplus of good-order freight cars in excess of 450,000 and available data were said to indicate that the surplus of locomotives in good order approximated 9000. Net revenue from railroad freight operation, it was declared, has greatly increased, while revenue from railroad passenger operation has greatly decreased.

"No doubt some of the present freight rates are too low, but, on the other hand, some of them are undoubtedly too high," said Mr. Williamson. "Some commodities can stand an increase and others cannot. The record in this case clearly indicates that an increase of 15 per cent in all freight rates will not solve the problem facing the carriers."

Horizontal Increase Not Expected

It is undoubtedly the prevailing view that the railroads will not be given a horizontal increase in rates, much less the full 15 per cent requested. In some quarters it is believed the entire petition will be turned down and the way left open to the carriers to file tariffs for increased rates on specific commodities. Other

views are that certain increases will be granted in the present proceedings, but will exclude all or a large proportion of rates on such lines as iron and steel, non-ferrous metals, agricultural products, including livestock; lumber, automobiles, petroleum and class rates. These particular commodities have been enumerated because it is recalled that preliminary to the hearings, the commission specifically asked the carriers if they proposed to make increases in these rates. The carriers replied affirmatively. Apparently, the commission made its special inquiry because of comparatively recent changes in these rates. Some of them, including short-haul rates on iron and steel, were increased under the Hoch-Smith investigation. Eastern class rates were also increased, while rates on automobiles had been reduced in order to meet motor truck competition, as were other rates.

If Decision Is Favorable Railroads May Release Orders

Another view as to the character of the decision is that it will permit certain increases and make suggestions for elimination of wasteful transportation and coordination with other means of transportation and also indicate possibilities of greater revenue through consolidation of the railroads.

Should the decision turn out to be of a sufficiently constructive character, it is believed the railroads would release orders for important requirements that would be of great aid to the iron and steel and other industries and prove an important force in reviving business generally. The railroads indicated in their petition that they would proceed along this line if given favorable consideration and pointed out it would be to their advantage to come into the market by reason of prevailing low prices.

white metal bearings to the tinned surface of the cast-iron shell, instead of anchoring by dovetailing or some other method.

British Tin Compound Useful On Cast Iron

The wide applications which have been found for a pure tin compound recently developed by a British manufacturer have been described by the Tin Research and Industrial Applications Committee in England in a statement of recent tin research activities. Of the new applications for this compound it is stated that it has been found to provide a tinned surface, creating an alloy with the metal treated.

This tin coating is stated to have been equally effective in tinning such metals as cast iron, steel, phosphor bronze and manganese bronze. The greatest use for the tin compound is in tinning cast iron, and it is said to have increased the efficiency of bearings in Diesel engines, air compressors and other machines subject to heavy pressure. It permits soldering the

Steel Furniture Orders Off Slightly in August

WASHINGTON, Oct. 6. — Orders for steel furniture in the "business group" were valued at \$1,009,506 in August as compared with \$1,092,118 in July, according to reports received by the Bureau of the Census from 36 manufacturers. In the first eight months of 1931 they were valued at \$10,909,373, against \$17,390,872 in the corresponding period of last year.

In the shelving group, orders in August were valued at \$307,384, against \$328,371 in July. In the first eight months of the current year orders were valued at \$3,276,471,

against \$6,174,281 in the corresponding period of last year.

Orders for fireproof safes, reported by 18 producers, were valued at \$221,022 in August as against \$239,455 in July. In the first eight months of 1931 orders were valued at \$2,308,167, compared with \$5,692,226 in the corresponding period of last year.

Coming Meetings

October

Society of Automotive Engineers. Oct. 7 and 8. National production meeting, Detroit. John A. C. Warner, 29 West Thirty-ninth Street, New York, secretary.

Institute of Scrap Iron and Steel. Oct. 12 to 14. Semi-annual meeting, Pittsburgh. Benjamin Schwartz, 11 West Forty-second Street, New York, director.

National Safety Council. Oct. 12 to 16. Twentieth annual safety congress, Stevens Hotel, Chicago. W. H. Cameron, 20 North Wacker Drive, Chicago, secretary.

Society of Industrial Engineers. Oct. 14 to 16. Eighteenth annual meeting, Fort Pitt Hotel, Pittsburgh. George C. Dent, 205 West Wacker Drive, Chicago, secretary.

Associated Machine Tool Dealers. Oct. 14 to 16. Fall meeting, Olympia Fields Country Club, Chicago. A. G. Bryant, 2558 West Sixteenth Street, Chicago, secretary-treasurer.

Gray Iron Institute. Oct. 15 and 16. Fourth annual convention, West Baden Springs Hotel, West Baden Springs, Ind. J. Arthur Tuscany, Terminal Tower Building, Cleveland, manager.

Mining and Metallurgical Advisory Boards, Carnegie Institute of Technology and United States Bureau of Mines. Oct. 16. Fifth annual meeting, Carnegie Institute of Technology, Pittsburgh. John D. Beatty, Carnegie Institute of Technology, secretary.

American Management Association. Oct. 21 to 23. Industrial marketing conference, Hotel Statler, Cleveland. W. J. Donald, 20 Vesey Street, New York, managing director.

American Iron and Steel Institute. Oct. 23. Semi-annual meeting, Commodore Hotel, New York. Howard H. Cook, 75 West Street, New York, secretary.

American Institute of Steel Construction. Oct. 27 to 31. Annual convention, Greenbrier Hotel, White Sulphur Springs, W. Va. Charles F. Abbott, 209 Madison Avenue, New York, executive director.

"Industrial Stabilization, Its International Aspects," will be discussed by Dr. H. S. Person, managing director of the Taylor Society, at a dinner meeting of the New York metropolitan section of the society at Fraternity Clubs, New York, Oct. 15. Dr. Person has spent the summer surveying the European situation.

Fisher Industries, Inc., Detroit, has removed its offices to Junction Avenue at McGregor.

Technological Progress Not a Cause of Depression

Report of Chamber of Commerce of United States Absolves Machine of Blame for Slump

WASHINGTON, Oct. 5.—For the purpose of giving greater stability to business, the Committee on Continuity of Business and Employment of the Chamber of Commerce of the United States has just submitted a number of recommendations, which will be passed upon by referendum vote of the chamber's member organizations.

The recommendations relate to limited amendment of the anti-trust laws, the setting up of a national economic council, and the establishment of unemployment benefits "based upon definite reserves previously established," and other measures.

Conclusions formulated discredit the assumption that technological development has resulted in the permanent reduction of employment by way of substituting machines for labor. They condemn manipulative speculation which leads to inflation or depression and recommend that commodity and security exchanges take steps to prevent it. They suggest more stringent regulation of credits, urge that every possible step be taken for international disarmament and emphasize the importance of agriculture in the national economy.

Similar to Swope Plan

While not so sweeping, the committee report carries suggestions similar to that of the Swope plan. Discussing long-time measures the committee mentions among other subjects the following: Balancing of production and consumption, modification of the anti-trust laws to permit, under supervision, voluntary agreements regarding production and distribution; the establishment of a national economic council with advisory functions; industrial planning by individual concerns and trade associations; unemployment, sickness, accident and old age insurance based upon definite reserves previously established; shorter hours of labor.

Immediate measures for meeting the problem of unemployment include centralized local organizations for providing employment; central registration of workers seeking employment; planning and execution of public works.

Cites Causes of Depression

In the section dealing with causes of the depression the committee says that, undoubtedly, wars and catastrophes, undue expansion and excessive speculation are all contributing factors in succeeding business depressions and, in the present instance, have a

bearing on the intensity and duration of the depression.

In rejecting the contention that technological advancement is one of the principal causes of the present widespread unemployment, the committee points out that, notwithstanding the rapid progress in the use of labor-saving machinery during recent years, census tabulations establish that the proportion of the population gainfully employed, both in factories and other activities, was as high in 1929 as in 1899. Moreover, the committee declares, in 1899 the average number of wage earners in manufacturing establishments represented 6 per cent of the entire population and in 1929 this number had increased to 7 per cent. Meanwhile, says the committee, in the period between 1900 and 1930 weekly hours of work were substantially shortened and real wages materially increased. Even though technological improvements may not be considered the primary cause of unemployment, such improvements are held by the committee as a serious factor in considering temporary unemployment, especially where technological advance has been extremely rapid, as in the United States during the past decade. The committee states that it is quite possible that such changes may occur too rapidly and at a given time affect more labor than can readily be absorbed by other industries, in the same manner that

the production of a certain class of merchandise may exceed the power of the country to consume. The committee believes that hours of labor should decrease and that wages should increase as the productive capacity of the nation grows.

Suggest Amending Trust Laws

Among the measures suggested to promote a proper coordination of production and consumption is the amendment to the anti-trust laws. Under Government supervision, the committee proposes that business concerns may enter into contracts for the purpose of equalizing production and consumption. It is also proposed that businesses may be advised in advance by a Government authority whether proposed combinations are prohibited by the anti-trust laws.

The proposal of the committee for the creation of a national economic council suggests that it be set up by business as an advisory board to consider economic problems. The committee says that among such problems may be (a) ways in which production can be controlled and directed as a benefit instead of a menace to prosperity; (b) wage levels; (c) various phases of foreign trade, both export and import; (d) collection and dissemination of authoritative information and business statistics; (e) numerous subjects involving agriculture, transportation, credit, finance and curbing of harmful speculation.

The proposed council would consist of some three to five members of the highest standing and representative of the country as a whole. It would be sufficiently financed to permit of the employment of able economists and statisticians who would work in cooperation with Governmental agencies and would be entirely independent in its judgment and conclusions.

Reduced Short-Haul Freight Rates to Go Into Effect on 10 Days' Notice

WASHINGTON, Oct. 6.—The Interstate Commerce Commission has granted railroads in Central Freight and Trunk Line territories special permission to establish reduced rates on iron and steel products moving distances of not over 100 miles. The order, made public yesterday, was dated Oct. 3 and permits the railroads to establish the rates upon 10 days' notice.

The rates are carried in a scale providing a rate of 3c. per mile for hauls of five miles and less to 16c. per mile for hauls of 100 miles and over 95. The scale was published in THE IRON AGE of Sept. 3, page 643. The rates, in accordance with a previous order of the commission, are to be made on a point-to-point basis rather than on a grouping basis.

The scale is similar to that apply-

ing in Pennsylvania on iron and steel shipments of 100 miles and less.

The new United States Navy dirigible Akron is equipped with eight Gould pumps for ballasting. These pumps are made in large part from aluminum alloy so that the total weight of each pump is about 16 lb., as compared with 110 lb. if it were made of cast iron.

Total sales in 1929 by 533 plants making tools, exclusive of edge or machine tools, files, or saws, were reported to the Census of Distribution as amounting to \$100,038,000, of which 60.4 per cent, or \$60,377,000 worth, was made to wholesalers.

Gear Makers to Meet at Pittsburgh Oct. 15

Cost finding practices will feature the commercial part of the semi-annual meeting of the American Gear Manufacturers' Association, which will be held at the William Penn Hotel, Pittsburgh, Oct. 15, 16 and 17. Speakers will include J. B. Sehl, cost agent for the American Drop Forging Institute.

A comprehensive technical program has also been arranged; it will include a paper on "Good Practice in the Manufacture of Speed Reducers," by P. C. Day, Falk Corp., Milwaukee.

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Carnegie Steel Co. Offers New Bridge Flooring

A floor which would meet all structural requirements as to strength and safety and yet be as light as possible has long been a serious study of bridge engineers. The Carnegie Steel Co. now is furnishing what it believes to be a solution of the problem in an interlaced grating which is called T-Tri-Lok flooring, which has been installed in the bridge over the Monongahela River, starting at Boston, Pa.

This flooring primarily consists of tees punched or slotted, into which bars are forced under high pressure, forming an interlaced construction which, when filled with concrete, provides the required strength, and, in addition, a hard non-skid surface. Developed originally by the Tri-Lok Co. of Pittsburgh, following methods used for years in the manufacture of grat-

ing, the new product was tested under the auspices of Allegheny County at the Bureau of Public Roads in Washington. It is said to be lighter than other types of bridge flooring. The steel alone in the flooring of the Boston bridge weighs 23½ lb. per sq. ft., and when filled with concrete will weigh approximately 56 lb. per foot. These figures compare with 85 lb. per sq. ft. for a reinforced concrete slab of equivalent strength without wearing surface and 115 lb. with the wearing surface added.

For the Boston bridge, the T-Tri-Lok units were manufactured and shipped in pieces 30 ft. 5 in. long and 4 ft. wide, assembled complete and provided with holes for plug welding to the bridge stringers. The concrete soon will be poured over this network of steel, vibrated to insure a dense compact whole. Compared with other bridge floors, it is said the cost of laying is small, and once upon the bridge skeleton no forming of any kind is required to complete the concrete work. T-Tri-Lok flooring, it is stated, can be laid and a bridge opened for service in about one-half the time that would be required to complete any other floor system.

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Metallurgical Advisers to Meet Next Week

The fifth open meeting of the Metallurgical Advisory Board to the Carnegie Institute of Technology and the United States Bureau of Mines will be held at the Carnegie institute on Friday, Oct. 16. Those interested in metallurgical research are invited to attend. A comprehensive technical program has been prepared for the

morning and afternoon sessions. The closing event will be a dinner at the Hotel Schenley at which the principal speaker will be Charles F. Abbott, executive director, American Institute of Steel Construction, Inc., on the subject "Market Research in the Steel Industry."

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Gray Iron Institute to Discuss Various Topics

Group sessions will feature the fourth annual convention of the Gray Iron Institute to be held at West Baden Springs, Ind., Oct. 15 and 16. A merchandising clinic in charge of George L. Willman, Chicago, will be devoted to a discussion of the present market and a possible development of new markets for gray iron castings.

Three topics have been scheduled for a cost session. Rate setting in gray iron foundries will be the subject of a round table discussion led by William J. Grede, president, Liberty Foundry, Inc., Wauwatosa, Wis. R. O. Flanders, secretary, Blue Valley Foundry Co., Kansas City, will discuss "The Foundry Balance Sheet and Budget, How They Help," and Charles A. Klaus, the institute's Eastern cost consultant, will discuss "Savings from Comparative Cost Reports," giving actual experiences.

The subjects scheduled for a technical session include "Interpretation of the Technical Bulletin"; "Proposed Specifications," and "Standard Practices and What They Mean to the Industry," the latter by Oliver Smalley, technical director for the institute.

Advantages of the institute and its activities will be outlined at a dinner Oct. 15, and at the annual banquet the following night Dan M. Avey, editor of *Foundry*, will give his impressions of the convention. W. J. Barrett, Metropolitan Life Insurance Co., a member of President Hoover's unemployment commission, will discuss employment in the gray iron industry at a noon luncheon.

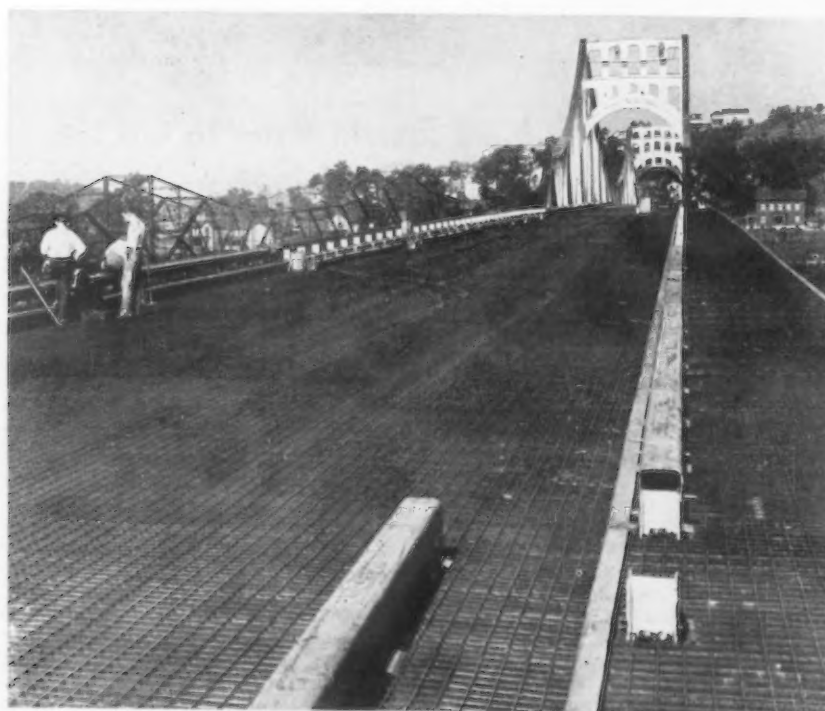
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Canadian Pig Iron Output Lowest Since 1924

TORONTO, Oct. 6.—Production of pig iron in Canada in August dropped to a new low for the year to date at 23,212 gross tons, against 40,303 tons in July. It was the smallest output for any month since December, 1924.

Production of steel ingots and direct steel castings totaled 52,491 tons in August, which was 16 per cent over the 45,097 tons reported for July. For the eight months, the output was 559,465 tons, compared with 762,663 tons in the corresponding period of 1930.

Output of ferroalloys in August, at 8248 tons, was the highest monthly rate recorded this year and compares with 3262 tons in the previous month.



New bridge flooring developed by Carnegie Steel Co.

OFF THE ASSEMBLY LINE



Automobile Companies Placing Initial Orders for 1932 Models

DETROIT, Oct. 5.

DESPITE the fact that current production of motor cars is at the lowest point of the year and gives no promise of improvement for at least 30 days, several automobile companies have placed initial orders for steel for their 1932 models. Chevrolet is said to have contracted for steel required for about 27,000 cars, while Ford has purchased small lots for its new car. It is believed that further business from Ford will materialize the coming week. Oldsmobile and Oakland-Pontiac are on the verge of buying for their forthcoming models. Orders received by steel companies from Hudson are understood to cover the needs for about 20,000 cars; the Oldsmobile purchase will be for 15,000. Although these transactions give assurance to certain steel mills that they are to supply tonnage to automobile makers, they do not mean an immediate gain in steel plant operations, as the dates for the releases of the steel have not yet been set.

Ford's Purchases Small

There was an exaggerated story the past week that the Ford Motor Co. had contracted with a well-known steel company for 100,000 tons of strip and sheet steel, but this proved to be a myth. The Ford company has confined recent purchases of steel to small tonnages mostly for experimental purposes. Ford is now in the midst of the job of tooling up for the revamped model A. It is reported to have a final lot of 12,000 of the present series going through the Rouge plant; after these assemblies have been completed, actual production will cease until parts for the new car are manufactured. There is increasing evidence that operations will not get into full swing at Rouge until the middle of November or possibly Dec.

Ford may not be in production on new car until Nov. 15 or Dec. 1. Present output of current models is mostly commercial cars.

* * *

Several motor car makers, including Chevrolet, have bought steel for new cars. Ford purchases of steel are expected shortly.

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Chrysler Corp. shipped 23,759 cars in September and 103,227 in third quarter, exceeding last year's record by wide margin. September shipments include Graham-Paige 1,612; Reo 1,205; Oldsmobile 2,590; Hupp 784; Auburn 851.

* * *

New low-priced six to be manufactured in Detroit before end of the year.

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1. Observers are pointing to the fact that many months were required for the Ford company to retool for model A when model T was replaced and that the company will be doing a speedy job if it is in a position to produce new models within the next 45 to 60 days. It is believed that Ford will manufacture enough cars toward the end of the year to put one or two cars in the hands of each dealer by the time of the January automobile shows, but deliveries of new models to customers before the end of the year are regarded as virtually impossible. Most of the current "clean-up" production at Rouge is commercial cars, which have consistently maintained their leading position in volume of sales. Ford is continuing its policy of refusing to give out information

regarding its output, so that published statements of its production are only guesses.

Chevrolet to Start Work Soon

Chevrolet probably will start work on its new car late in October, but public announcement of models is not looked for until December, with initial deliveries scheduled for January. After a month's shutdown, Buick is opening today on a five-day week program turning out parts for its new cars, which are not expected to be shown until December or January. Dodge Brothers have shut down its local plant for two weeks during which retooling for new models will be started. Plymouth's assemblies have tapered sharply in the last two weeks and are expected to be considerably below the September level during the remainder of the year. All divisions of the Chrysler Corp. shipped 23,759 cars in September, compared with 15,720 in the same month of 1930. In the third quarter, total shipments were 103,227 cars, against 55,665 in the same period of last year, a gain of 85 per cent. For the first nine months of this year, production amounted to 242,953 cars, compared with 238,063 cars in the like period in 1930. This excellent showing is attributed to the introduction of the new Plymouth, which broke previous production records in July, August and September.

Graham-Paige shipped 1612 cars in September, and its unfilled orders are the largest in six months. Reo made 1205 cars last month, compared with 1137 in August; Oldsmobile 2590 cars, against 2367 in August and 2298 in September a year ago. Hupp turned out 784 cars, compared with 847 in August and 853 in September, 1930. Auburn shipments last month were 851 cars, or double the number in the same month of last year. This brings

Auburn's production for the first nine months of the present year to 32,896, compared with 13,693 in all of 1930.

New Car to Be Produced

A new low-priced six is to be manufactured in Detroit before the end of the year by a new company sponsored by an old established maker whose name has not yet been revealed, according to announcement by George M. Graham, who will head the sales activities. Mr. Graham formerly was vice-president of the Willys-Overland company. The new car will have free wheeling, "cushioned" power to prevent vibration, and a longer wheelbase and greater roominess than is usually found in its price range. One report is that the new organization has the backing of the Studebaker company.

Retail sales of passenger cars in August were about 150,000. September output is unofficially estimated at 155,000 cars, the lowest monthly total since last December. A further decrease is expected this month. The downward course of the stock market and the nervousness of people about the economic situation have accentuated the usual seasonal recession so that it is of abnormal proportions.

Foundry operations continue poor, with Ford, Chevrolet and Oakland-Pontiac closed. Other large motor car foundries are running on a light schedule.

Company to Specialize in Foundry Flasks

Following a number of years' experimental work in the plant of the Fort Pitt Steel Casting Co., McKeesport, Pa., and a number of other foundries doing a wide variety of work, the Fort Pitt Flask Equipment Co. has been organized to engineer foundry flasks. Offices have been established in the Oliver Building, Pittsburgh, with C. H. Curry, president; H. J. Koch, vice-president, and C. S. Koch, treasurer. In addition to selling flasks manufactured at the Fort Pitt Steel Casting Co. plant, the sales plan contemplates a working arrangement with established and recognized steel foundries in localities where the time element and transportation considerations will serve to promote this arrangement. The company plans to work with foundry engineers, molding machine manufacturers and handling equipment builders in meeting individual requirements not only in steel, but in other types of flasks.

H. J. Koch, who is directing the organization, entered the steel castings business in 1904 and was engaged in special fact finding and advisory work on administrative matters at the Sharon, Pa., plant of the American Steel Foundries. He was later assistant to the district manager of this organization at Alliance, Ohio. In 1905 he became assistant general manager in charge of the commercial end of the business of the General Steel

Casting Co., Verona, Pa., and was interested in the establishment of the Fort Pitt Steel Casting Co. in 1906, although he did not become actively connected with that firm until 1908. He was successively secretary, sales manager and vice-president of the Fort Pitt Steel Casting Co., which position he still retains.

C. S. Koch entered the foundry business with Wm. Sellers & Co., Philadelphia, where he later became superintendent. He also served as assistant manager at the Titusville, Pa., plant of the American Radiator Co.; manager of the Franklin, Pa., plant of the American Steel Foundries, and manager of the Sharon, Pa., works of the same company until 1906, when he became president and general manager of the Fort Pitt Steel Casting Co. During the war he was employed as a civilian in charge of all matters pertaining to steel castings supplied the ordnance department.

C. W. Miller, who is engineer for the new company, served his apprenticeship with the Coshocton Iron Co., Coshocton, Ohio, later removing to Monongahela City, Pa., when that company established a plant there. Later he returned to the Coshocton plant, where he was in charge of the foundry, and subsequently was identified with the Black Diamond Engineering Co., Black Diamond, Pa. He returned to the Coshocton Iron Co. as superintendent again and remained until 1913, when he was made assistant superintendent for the General Electric Co. during and until the close of the war. He then was employed as foundry service engineer for the Herman Pneumatic Machine Co., Pittsburgh, and later was a foundry engineer in consulting work.

The development and sales work of the Fort Pitt Flask Equipment Co. will be furthered by J. C. Peirce, sales engineer, formerly identified with various organizations including Farrell Foundry & Machine Co., Ansonia, Conn.; Maxwell-Chalmers Automobile Co., Detroit; Saginaw Foundry Division, General Motors Corp., Saginaw, Mich., and National Sanitary Mfg. Co., Salem, Ohio. Mr. Peirce later was identified with the pressed steel department of Truscon Steel Co., Youngstown, specializing in flasks. W. R. Beck, also to be identified with sales and engineering work, served as chief engineer of the Hill Clutch Co., Cleveland, and later was chief tool designer of the Pressed Steel Co., Detroit. Mr. Beck organized a gray iron foundry in Detroit and served as president and general manager until 1919, following which he was manager of sales for the Massillon Steel Casting Co., Massillon, Ohio. Leo B. Callahan, who was identified with the Nugent Steel Casting Co., Chicago, and later, upon the consolidation of that organization with the Siver Steel Casting Co., Milwaukee, became salesman for the latter firm, will be sales engineer. He was recently identified with the West Michigan Steel Foundry Co., Muskegon, Mich.

Fabricated Steel Orders Declined in August

WASHINGTON, Oct. 6. — Orders for fabricated structural steel in August reported to the Bureau of the Census totaled 111,939 tons, representing a decline of 29,302 tons from bookings of 141,241 tons reported for July. The August bookings were reported by 233 establishments having a monthly capacity of 359,555 tons, while the July orders were reported by 231 establishments having a capacity of 354,942 tons. Estimated bookings in August were 124,400 tons, or 31.1 per cent of the country's total capacity, placed at 400,000 tons. Computed bookings in July were 159,200 tons or 39.8 per cent of capacity.

Total orders reported in the first eight months of 1931 were 1,240,449 tons, compared with 1,780,575 tons in the corresponding period of last year. Estimated bookings for all plants were 1,411,600 tons as against 2,020,000 tons.

Shipments in August reported by 228 plants were 123,098 tons, against 130,524 tons reported in July by 225 plants. Estimated shipments were 168,800 tons and 181,600 tons respectively. Shipments reported for the first eight months of the current year were 928,767 tons, compared with 1,521,088 tons in the corresponding period of 1930. Computed bookings for all plants during the two periods were 1,308,800 tons and 2,141,200 tons respectively.

Case School of Applied Science, Cleveland, in conjunction with the Cleveland Engineering Society, plans a series of educational industrial conferences at the school during the academic year 1931 to 1932. The first conference, covering metals and alloys, is scheduled for Nov. 18, 19 and 20, to be followed in January by a discussion on air conditioning, and in March one on industrial fuels. Demonstrations and exhibits of specimens and equipment will be conducted in the school laboratories. Information concerning the program may be obtained from Fred L. Plummer, and on exhibits from E. S. Ault, at the Case School.

The spring meeting of the Electrochemical Society will be held in Baltimore April 21 to 23, 1932, at the Lord Baltimore Hotel. The principal technical session will be "The Electric Furnace and Its Products." Dr. J. T. MacKenzie, chief chemist, American Cast Iron Pipe Co., Birmingham, will preside. A round table discussion in charge of F. A. Lidbury, president, Oldbury Electro Chemical Co., Niagara Falls, N. Y., will have as its topic "Electrochemistry and the Fertilizer Industry."

PERSONALS

F. J. GRIFFITHS, who has been president of the Republic Research Corp. of the Republic Steel Corp. since the merger that brought the latter company into existence and who was, prior to that, chairman of the board of the Central Alloy Steel Corp., which formed a part of the Republic organization, has been elected president and a director of the Timken Steel & Tube Co., Canton, Ohio, a subsidiary of the Timken Roller Bearing Co. M. T. LOTHROP, president of the two Timken companies, has been made chairman of the board of the Timken Steel & Tube Co. Mr. Griffiths has been identified with the making of steel for 30 years. He began his career with the United Alloy Steel Co. at Canton, which later was merged with the Central Steel Co., Massillon, Ohio, as the Central Alloy Steel Corp.

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O. F. STROMAN has been appointed industrial sales manager of the Westinghouse Electric & Mfg. Co., East Pittsburgh, following a reorganization of that department. BERNARD LESTER and C. B. STAINBACK have been appointed assistant sales managers, the former in general charge of directing the development of business with industrial users of electrical equipment, and the latter in charge of apparatus applying to these industrial groupings. Under Mr. Lester five industry divisional classifications have been created with the following in charge: G. E. STOLTZ, mining and metal-working electrification division; G. D. BOWNE, general mill electrification division; J. W. SPEER, machinery electrification division; E. B. BREMER, appliance electrification division; and E. F. MEAD, general industrial resale division. Nine divisions have been created under Mr. Stainback's supervision.

They are headed by J. R. OLNHAUSEN, medium alternating-current motor section; R. M. DAVIS, medium direct-current motor section; R. O. WATSON, large motor section; D. H. BYERLY, small motor section; W. W. REDDIE, welding section; T. C. KELLEY, industrial heating apparatus; W. G. BALPH, safety switch section; W. H. MCGILLIVRAY, control section, and F. W. HORST, cost section. J. M. MCKIBBIN, JR., has been appointed manager of the promotion and advertising section and will function under the joint direction of the assistant sales managers.

O. F. STROMAN, sales manager of the industrial department, a native of Buffalo, and a graduate of the Perkins School of Electricity, has been with the Westinghouse company since 1903. A year after, he completed an apprenticeship course at East Pittsburgh and he was given charge of one of the company's experimental departments. From 1906 to 1909 he was a member of the power sales department and then joined the industrial sales department. In 1912 he was made assistant to the manager and held that position until 1926 when he was appointed motor apparatus manager.

BERNARD LESTER, assistant sales manager, has been with the Westinghouse company since 1905. He is a native of England, and was graduated from Haverford College in 1904. Prior to his association with Westinghouse he was in the engineering department of the Jones & Laughlin Steel Corp., Pittsburgh. He is active in electrical association work and is the author of a number of papers on motors and motor application which have been published in various trade and scientific magazines.

C. B. STAINBACK, assistant sales

manager, was born at Henderson, N. C., and was graduated from North Carolina State College in 1910. After completing the Westinghouse apprenticeship course he entered the contract section of the industrial department in 1912. In 1920 he was made manager of the industrial contract section, and in 1926 was appointed section head of the medium direct-current motor section, holding that position until his latest appointment.

G. E. STOLTZ, manager of mining and metal-working electrification division, has been with the Westinghouse company since 1909. He was graduated from Ohio State University in 1909 and immediately entered the employ of the Westinghouse company. In 1911 he became a member of the steel mill section of the general engineering department and in 1926 was appointed manager of the industrial engineering division of that department, a position he held until his latest appointment. He is credited with a number of important patents and has participated in many of the major steel mill electrifications of the country. In his new position he is responsible for the sale of equipment to the producers and manufacturers of coal, coke, iron and steel, non-ferrous metals, dredges, shovels, petroleum, gas and chemical products, and manufacturers of specialized machinery used in these industries.

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H. J. FREYN, president, Freyn Engineering Co., Chicago, sailed from England Oct. 7, returning from a three months' sojourn in Europe. Mr. Freyn has been in England, France, Germany and the U. S. S. R., where he has been inspecting the progress of contracts which this company is executing abroad.

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WILLIAM T. BENTZ, heretofore vice-president and general sales manager of Steel & Tubes, Inc., Cleveland, a subsidiary of the Republic Steel Corp., has been appointed manager



F. J. GRIFFITHS



O. F. STROMAN



B. LESTER



C. B. STAINBACK



G. E. STOLTZ

of sales of rail steel products of the Republic Steel Corp'n. He will continue for the present to make his headquarters in Cleveland.

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H. K. HOTTENSTEIN has been appointed Western advertising manager of THE IRON AGE with headquarters at 1507 Otis Building, Chicago, succeeding F. S. Wayne, who has resigned. Mr. Hottenstein brings with him a wealth of experience in advertising work, having ably served on the advertising staffs of several well known business papers. More recently as a publisher on his own account, he gained a broad perspective of advertising in its relation to other publishing functions.

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GEORGE W. DAVIES, who was formerly assistant secretary and treasurer of the Campbell, Wyant & Cannon Foundry Co., Muskegon Heights, Mich., has been made assistant to the president of the Lakey Foundry & Machine Co., Muskegon, Mich., in charge of general sales.

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GEORGE H. MALONY has been elected secretary of Whitman & Barnes, Inc., Detroit, to succeed J. I. HOLTON, who has resigned.

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J. V. EMMONS, chief metallurgist of the Cleveland Twist Drill Co., Cleveland, is to discuss "Failures and Remedies of Small Tools: Machine Shop Practices" at a meeting of the Cincinnati chapter of the American Society for Steel Treating on Oct. 8 at the Engineers Club, Cincinnati.

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L. V. REDMAN, vice-president and director of research of the Bakelite Corp'n., New York, has been awarded the Grasselli Medal by the American section of the Society of Chemical Industry, a British organization. The award is made for "the thesis offering the most useful suggestions in applied chemistry."

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HARRY T. GILBERT, formerly special assistant to the president of Republic Steel Corp'n., and prior to that vice-president in charge of sales, has been made general manager of the Midland Steel Products Co., Cleveland, effective Oct. 15. For more than 20 years Mr. Gilbert had been with the Sharon Steel Hoop Co., leaving the vice-presidency of that company to become associated with Republic. He resigned his Republic connection in June of this year.

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H. A. WEBER, formerly assistant district sales manager in New York for the Weirton Steel Co., Weirton, W. Va., has been appointed New York district sales manager, succeeding the late H. M. EASTON. Mr. Weber has been identified with the company for several years, originally at Boston, but recently in the New York office.

OBITUARY

FREDERICK VON HILLER, Philadelphia district sales manager in the structural steel department of the Bethlehem Steel Co., died suddenly of pneumonia on Oct. 4 at his home in Elkins Park, Philadelphia. He had been associated with the Bethlehem Steel Co. for 15 years, having entered the organization in 1916 when the Pennsylvania Steel Co. was acquired. During the war he was in the Philadelphia office in charge of the track department and in 1921 went to Mexico City to represent the export division of the company. He returned to Philadelphia in 1928. He was born in Germany 56 years ago.

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W. P. MOSTELLER, who represented the United States Pipe & Foundry Co. in New England and other territories for many years, died suddenly of heart disease on Oct. 1 at a dinner dance of the New England Water Works Association at the Hotel Statler, Boston.

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WASHINGTON W. BALKWILL, long prominently identified with the steel foundry industry, died in Willoughby, Ohio, a Cleveland suburb, on Oct. 4, aged 82 years. A native of England, his parents emigrated to the United States soon after his birth and located in Cleveland. He was one of the organizers in 1880 of the Bowler Foundry Co., Cleveland, and in 1886 was one of the organizers of the Cleveland Frog & Crossing Co. and the Standard Car Wheel Co. Six years later he founded the Cleveland Steel Casting Co. and was its president until he retired in 1913. Mr. Balkwill was one of the organizers of the Steel Founders' Society of America and a member of the National Founders' Association and of the American Iron and Steel Institute.

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JOHN HELWIG, JR., of the Helwig Mfg. Co., St. Paul, Minn., maker of pneumatic tools, died on Sept. 8.

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ROBERT D. PLATT, chief engineer of the Koppers Construction Co., Pittsburgh, died suddenly at his home in that city on Sept. 25, aged 46 years. He was a native of Philadelphia, and received his early engineering training with the Pencoyd Iron Works, where he remained until 1910. He then went to Johnstown, Pa., to enter the engineering department of the Cambria Steel Co., and subsequently spent some time in a similar capacity at both the South Chicago and Gary works of the Illinois Steel Co. Mr. Platt went with the Koppers company in 1912 in its Chicago office, and in 1915 was placed in charge of the oven department. He became chief draftsman in 1917, and the following year was made assistant chief engineer.

He had been chief engineer since June 30, 1928.

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COL. E. A. SIMMONS, president of the Simmons-Boardman Publishing Co., New York, died of a cerebral hemorrhage at his home in Brooklyn on Sept. 30, aged 56 years. He had been chairman of the board of the American Machine Tool Co. since its organization in 1915, and had held a similar position with the American Saw Mill Machinery Co. since 1919.

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FREDERICK W. NEWCOMB, who had been associated for over 35 years with the Arthur C. Harvey Co., importer and dealer of iron and steel, Boston, died in that city on Sept. 25.

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RICHARD E. WARNER, who in 1883 founded the company that later became White, Warner & Co., Taunton, Mass., manufacturers of stoves and heaters, died on Oct. 1, in a Fall River, Mass., hospital after two operations. Mr. Warner was born in New Bedford, Mass., 70 years ago.

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ARTHUR MORGAN DODD, general sales manager of the Horton Mfg. Co., washing machine manufacturer, Fort Wayne, Ind., died of heart disease recently at his home. He was 47 years old.

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To Consider Reclassifying Railroad Scrap

The American Railway Association has appointed a special committee to confer with the Institute of Scrap Iron and Steel on a revision of scrap classifications and other items involved in the monthly railroad scrap lists. The committees of both organizations will meet at the William Penn Hotel in Pittsburgh on Wednesday, Oct. 14.

The committee of the railway association is composed of the following: J. C. Kirk, chairman, Chicago, Rock Island & Pacific; James Young, Pennsylvania; A. L. Prentice, New York Central; T. J. Hegeman, Chicago, Burlington & Quincy; G. W. Lieber, Missouri-Kansas-Texas; J. J. Collins, Erie.

The railroad scrap committee of the scrap institute is as follows: Frank Parker, chairman, Chicago; Harry Roblin, Buffalo; Charles Dreifus, Pittsburgh; William Rosenthal, St. Louis; David Strauss, New York; Ike Wilkoff, Youngstown; W. G. Mitchell, Boston; Harry Kirchmann, Philadelphia; A. Diefenthal, New Orleans; Lee J. Workum, Portsmouth; Harry Nieder, Seattle; N. Nathan, Oakland, Cal.; H. N. Cohn, Butler, Pa.; William Ross, Chicago; William M. Hilb, Cincinnati.

Production and Demand Getting Closer Together

By DR. LEWIS H. HANEY

Director, New York University Bureau of Business Research

FOR the fourth month in succession, both the "composite demand line" (or index of activity in steel-consuming industries) and the index of steel production declined (in August). An examination of the chart suggests the following conclusions:

1. There has been a prolonged and rather sharp recession in the demand for steel and in steel output.

2. There is some probability that no sustained upturn in steel production will occur until the demand line rises; as such a rise is not yet in evidence, one is warranted in leaning toward the conclusion that the underlying trend of steel production is still downward.

3. Steel ingot output remains above its average relation to the indicated requirements of the chief consuming industries and, while it has been in this position so long that one is perhaps justified in considering this seeming maladjustment to be more apparent than real, it creates some presumption that stocks of steel exceed current requirements. Such stocks may be crude or finished—in the hands of producers, distributors or consumers.

4. The index of steel production is far above the level reached at the low point in 1921, while the index of demand for steel is almost exactly at its 1921 low. There is thus some precedent for the foregoing conclusion.

It may be of interest to note the relative positions of some of the individual demand factors embraced in the composite demand line, especially as to how their present levels compare with those of 1921. We find, first, that building activity, agricultural purchasing power and railroad freight traffic (in tons) are much under 1921 bottom levels. The first two of these items are notably low in this respect. Also, the indexes of mining and oil production and of iron and steel exports are somewhat lower than in 1921. On the other hand, two groups of industries which are important steel consumers

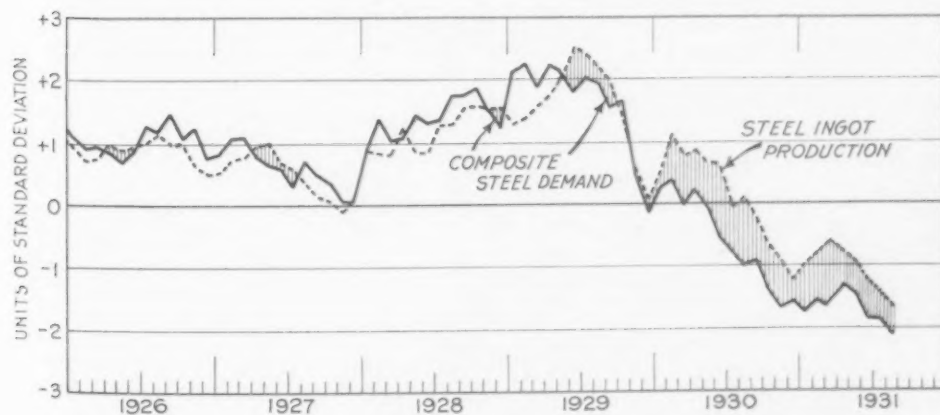
are operating on higher levels than in the last great depression. These are general manufacturing (excluding steel and automobiles) and automobile manufacturing.

Finally, it may be noted that several steel-consuming industries are at present not expanding, but are rather tending to sag lower, and that in this respect the situation differs from that found in 1921. For example, in 1921, building activity and general manufacturing (excluding steel and automobiles) were distinctly on the upgrade in the second half of the year, and this is not true in the current period. In 1921, mining and oil production as a group had stabilized and were beginning to turn upward, which again can hardly be said of the present.

Automobile and railroad transportation activities, however, were sagging in 1921, as now.

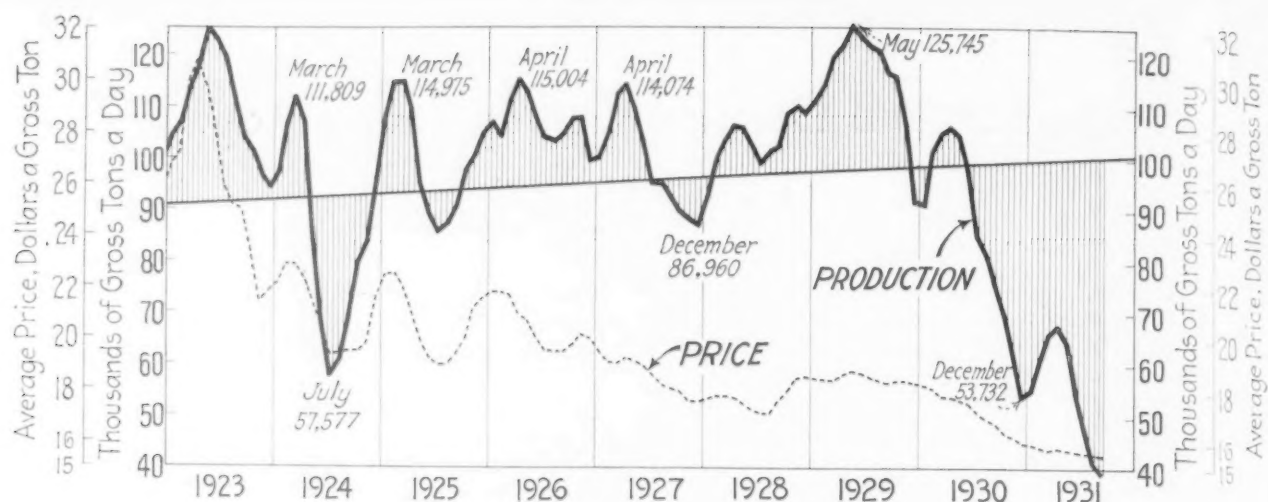
On the whole, therefore, the conclusion seems to be warranted that the outlook ten years ago was appreciably better than it is now. Miscellaneous manufacturing industries have been of great importance in sustaining the volume of steel demand during the past months, and are at present relatively more important than in 1921; but it is impossible to see much promise of any rising trend during the next few months.

Probably the most favorable feature of the data presented in the chart below is the relatively great decline in steel production in comparison with the decline in the composite demand line, especially since last April. Not only is steel production very low in comparison with any conceivable line of long-term trend, but it appears to be gradually getting into line with indicated requirements. Thus we find that between April and August our adjusted index of steel production fell 29 per cent, while the index of demand fell only 10 per cent. While the readjustment in steel production does not yet seem to be complete, considerable progress has been made toward restoring the desirable balance between supply and demand.



The Iron Age, October 8, 1931—955

FURTHER reduction in the spread between supply and demand is a hopeful sign. Until a balance between them is struck we can scarcely look for sustained improvement in business.



Pig Iron Production Still Declining— Net Loss of Three Furnaces

Production of Coke Pig Iron and of Ferromanganese

	Gross Tons Pig Iron*		Ferromanganese†	
	1930	1931	1930	1931
January	2,827,464	1,714,266	27,260	14,251
February	2,838,920	1,706,621	21,310	19,480
March	3,246,171	2,032,248	23,345	27,899
April	3,181,868	2,019,529	27,777	25,456
May	3,232,760	1,994,082	30,296	23,959
June	2,934,129	1,638,627	27,327	11,243
½ year.....	18,261,312	11,105,373	157,325	122,288
July	2,639,537	1,463,220	17,728	17,776
August	2,523,921	1,280,526	20,909	12,482
September	2,276,770	1,168,915	21,181	14,393
9 months.....	25,701,540	15,018,034	217,143	166,939
October	2,164,768	.....	24,480	.....
November	1,867,107	.....	18,619	.....
December	1,665,690	.....	16,288	.....
Year	31,399,195	.....	276,530	.....

*These totals do not include charcoal pig iron. The 1930 production of this iron was 96,580 gross tons.
†Included in pig iron figures.

PRODUCTION of coke pig iron in September from complete reports from all producing companies amounted to 1,168,915 gross tons, an average of 38,964 tons daily. Both figures are the lowest since those for September, 1921—just ten years ago.

Furnaces in operation Oct. 1 numbered 73, against 76 on Sept. 1. They were making iron at the rate of 38,600 tons daily, against 39,085 tons on Sept. 1.

In nine months production has been 15,018,034 tons, a loss of more than 10,000,000 tons from the first nine months of 1930, representing a decline of 41.6 per cent in one year.

Net Loss of Three Furnaces

Six stacks were started up during September and nine were shut down, the net loss being three. The Steel

Daily Average Production of Coke Pig Iron

	Gross Tons		
	1929	1930	1931
January	111,044	91,209	55,299
February	114,507	101,390	60,950
March	119,822	104,715	65,556
April	122,087	106,062	67,317
May	125,745	104,283	64,325
June	123,908	97,804	54,621
½ year.....	119,564	100,891	61,356
July	122,100	85,146	47,201
August	121,151	81,417	41,308
September	116,585	75,890	38,964
October	115,745	69,831	.....
November	106,047	62,237	.....
December	91,513	53,732	.....
Year	115,851	86,025	.....

Merchant Iron Made, Daily Rate

1930	Tons	1931	Tons
Sept.	13,548	March	11,481
Oct.	12,043	April	13,439
Nov.	12,507	May	13,212
Dec.	12,780	June	11,209
1931		July	12,012
Jan.	9,416	Aug.	9,569
Feb.	11,332	Sept.	8,985

Production by Districts and Coke Furnaces in Blast

District	Production (Gross Tons)		October 1		September 1	
	September (30 Days)	August (31 Days)	Number in Blast	Operating Rate, Tons a Day	Number in Blast	Operating Rate, Tons a Day
Buffalo	97,254	97,236	5	3,240	5	3,135
Other New York and Mass.	13,691	15,239	1	455	1	490
New Jersey .....	.....	.....	0	.....	0	.....
Pennsylvania:						
Lehigh Valley*	32,645	35,969	3	1,090	3	870
Schuylkill Valley	15,447	17,108	1	515	1	550
Susquehanna and Lebanon Valleys .....	.....	11,226	0	.....	1	360
Ferromanganese .....	.....	.....	0	.....	0	.....
Pittsburgh District	182,054	211,763	9	6,065	11	6,545
Ferro. and Spiegel	4,149	4,419	1	140	1	145
Shenango Valley	9,426	10,591	1	450	0	.....
Western Pennsylvania	20,273	29,948	1	680	1	610
Ferro. and Spiegel	5,970	1,223	1	200	1	95
Maryland	44,245	49,842	2	1,475	2	1,405
Wheeling District	102,194	125,808	5	3,405	5	3,325
Ohio:						
Mahoning Valley	117,197	120,156	7	3,680	8	4,095
Central and Northern	106,682	105,221	8	3,740	7	3,380
Southern	29,753	20,725	2	875	2	670
Illinois and Indiana	223,409	233,486	11	6,905	13	7,520
Mich., Wis. and Minn.	36,524	43,523	3	1,215	3	1,405
Colo., Mo. and Utah	19,493	16,539	2	650	2	855
Virginia .....	.....	.....	0	.....	0	.....
Kentucky	13,081	11,709	1	435	1	380
Alabama	95,518	116,365	9	3,385	7	3,250
Ferromanganese .....	.....	2,430	0	.....	1	80
Tennessee .....	.....	.....	9	.....	0	.....
Total	1,168,915	1,280,526	73	38,600	76	39,085

*Includes spiegeleisen.

Corporation started five stacks and took off five stacks. Independent steel companies started one and closed down three. One merchant furnace was taken off.

Furnaces started up include one Denora of the American Steel & Wire

Co., one Farrell of the Carnegie Steel Co., Central B of the American Steel & Wire Co., Gary No. 2 of the Illinois Steel Co., Fairfield No. 6 of the Tennessee company and Portsmouth of the Wheeling Steel Corp. Furnaces shut down include Carrie No. 4 and

Edgar Thomson F and H of the Carnegie Steel Co., Gary No. 4 and Joliet No. 4 of the Illinois Steel Co., Steelton A of the Bethlehem Steel Corp., Hubbard No. 2 and Iroquois No. 3 of the Youngstown Sheet & Tube Co., and Globe of the Globe Iron Co.

Further Drop in Steel Ingot Production

PRODUCTION of steel ingots in the United States in September is reported by the American Iron and Steel Institute at about 10 per cent below that for August, thus continuing the steady decline which began in April. The drop in the two preceding months was about 9 per cent each time.

Production of open-hearth and Bessemer ingots in September was calculated at 1,547,602 gross tons, compared with 1,719,462 tons in August. The current figure is the lowest since that of September, 1921, when 1,342,092 tons was made.

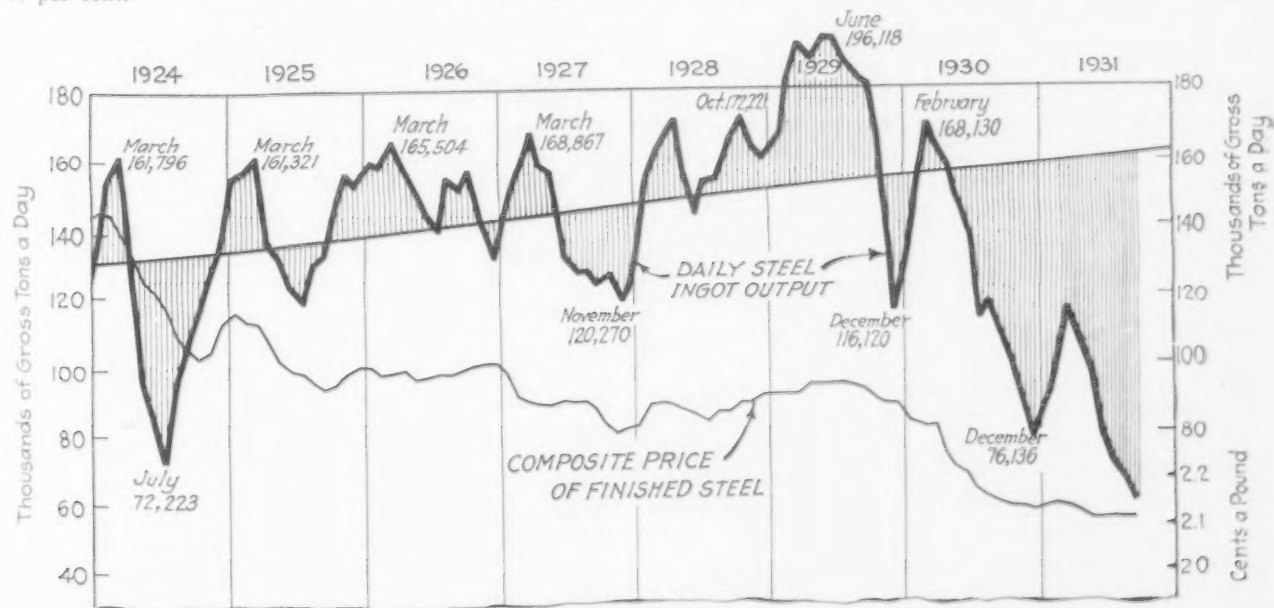
On the daily basis production was 59,523 tons, or at the rate of 28.02 per cent of capacity as of Dec. 31 last. This compares with 66,133 tons in August and 31.13 per cent of capacity.

In the nine months, production has been 20,411,736 tons, compared with 32,401,981 tons in the same period last year. The reduction was 37 per cent. Bessemer production has suffered more severely than open-hearth in the nine months, having lost 41.3 per cent against 36.4 per cent. In September, however, Bessemer tonnage gained 14 per cent over August, while open-hearth tonnage lost about 13 per cent.

PRODUCTION OF OPEN-HEARTH AND BESSEMER STEEL INGOTS

(Gross Tons)

	Reported by Companies Which Made 95.21 Per Cent of the 1930 Ingots		Calculated Output of All Companies		No. of Working Days
	Open-Hearth	Bessemer	Monthly	Daily	
Total, 1929.....	44,101,321	7,091,680	54,312,279	174,639	311
1930					
January	3,157,761	441,572	3,778,235	139,935	27
February	3,335,428	508,618	4,035,111	168,130	24
March	3,513,269	539,616	4,254,331	163,628	26
April	3,405,671	509,234	4,109,492	158,057	26
May	3,265,353	528,968	3,982,915	147,515	27
June	2,849,079	407,586	3,418,535	136,739	25
Six months.....	19,526,561	2,935,594	23,578,619	152,120	155
July	2,430,128	353,723	2,922,220	112,393	26
August	2,541,367	374,467	3,060,763	117,722	26
September	2,275,910	429,975	2,840,379	109,245	26
Nine months.....	26,773,966	4,093,759	32,401,981	139,064	233
October	2,165,341	399,704	2,692,539	99,724	27
November	1,807,133	300,339	2,212,220	88,489	25
December	1,659,026	226,786	1,979,547	76,136	26
Total, 1930.....	32,405,466	5,020,588	39,286,287	126,322	311
1931					
January	2,044,298	296,620	2,458,689	91,063	27
February	2,085,529	296,972	2,502,366	104,265	24
March	2,504,060	346,139	2,993,590	115,139	26
April	2,275,404	316,668	2,722,479	104,711	26
May	2,083,833	301,639	2,505,485	96,365	26
June	1,730,109	246,365	2,075,910	79,843	26
Six months.....	12,723,233	1,804,403	15,258,519	98,442	155
July	1,570,776	225,020	1,886,153	72,544	26
August	1,462,720	174,389	1,719,462	66,133	26
September	1,274,321	199,151	1,547,602	59,523	26
Nine months.....	17,931,950	2,402,964	20,411,736	87,604	233



Ingot output in September showed a further decline of 10 per cent. The total was the smallest for any month since 1921. Prices averaged the same as in August.

(ESTABLISHED 1855)

Profit and "Service"

THOSE critics of our industrial system who have condemned the "profit motive" and urged the substitution of the "service motive" will grant that industry in its present state—even though without its consent—comes very close to the profit elimination which they seek to make into a virtue. For months the policy of many industrial corporations has been dictated for the most part by the desire to give work to the largest possible number of employees. Low production cost, it goes without saying, has been out of the question, with the staggering of employment in the way that has been necessary in order that every man on the payroll may have work for a greater or less part of each week.

Nor has the profit motive been consulted when various corporations have made large outlays in community relief work, or kept on with expenditures for improvements, or relieved employees of the obligation to make payments on subscriptions to company stock. In addition to what has been published of the burdens assumed by industry in these directions, a vast deal has been done that has had no publicity. Nothing has been said, for example, of the action of some large corporations in respect to rentals for company houses. In other depressions it has not been unusual to carry tenants along, deductions from the pay envelope being made later when operations returned to normal. Today, the companies referred to adjust each month's rental charge to the number of days' employment the tenant has had. If he has worked but one-third time his rent becomes one-third the usual, and so on.

Theories aside, there can be no gainsaying the value to any community of an industry or a corporation that has had enough success with the profit motive to be able to serve in these very effective ways, now that profits have so generally turned into losses.

The Best "Plan"

THE further we get along with this economic depression the clearer become our views in respect to it. The stronger becomes the conviction that the fundamental causes are social, rather than physical, financial, or monetary. Many of the hypotheses that look fundamental may be demolished one after the other.

There is some intelligent thought that this depression was probably not foreordained, nor written in the sky, but that starting with a normal minor

recession we have propagated it by ignorantly doing the reverse of proper remedies for its cure.

In spite of ourselves, nevertheless, the cure is in process. In Germany and Great Britain that became compulsory. In America it is occurring through the good sense of our people, which is superior to that of our politicians. We have plenty of work to be done that will relieve unemployment, when everybody becomes willing to obey the law of supply and demand. In this connection we may remember that always we have with us about two million persons who are classified as "tramps, work-shy, etc."

We can not prophesy rationally when we are going to "turn the corner." We can not so prophesy for the reason that no one knows when popular psychology will change for the better; when there will be a disappearance of fear. We can only rely upon the good sense of our people, who do not want to do foolish things although too often they let foolish things be done in their name.

At present the predominant influence is fear. Fear of further extravagance by politicians, the making of work to be done at wages above the prevailing rates, the abstention from work unless desired terms are granted, the support of idleness by doles, the maneuvers of governments to support commodity prices, etc.

When fear is exorcised there will be a release of credit from the savings banks and of currency (gold) from the strong boxes, a revival of building, and an increase in employment all around. The best "plan" of all in this juncture is for nobody to have any plan beyond the reduction of taxes and obedience to the law of supply and demand.

Widen the Whole Market

COOPERATION by members of a trade association in extending the use of a given product is not a new story. Lumber, cement, sugar, ice, various fruits, are examples of sales increase by campaigns backed by an entire group or a considerable section of producers in a given line. What any member of the group gets out of the increment is a matter of individual enterprise and alertness. Much has been done also in the extension of markets by independent initiative, as one or another producer of steel, for example, has set about studying the problems of his manufacturing consumers to make them better feeders of the rolling mill. More will be done in this direction, as we have pointed out heretofore, when various product groups in the steel industry get behind a plan for cooperative market research. That con-

summation, however, is likely to wait on the formation of an association of steel manufacturers which through a research board will plan work on non-competitive technical problems submitted by member companies or by associations of engineers or consumers.

Meanwhile there is evidence in various directions that industrial executives are alive as they have never been before to the need that in any extension of productive capacity there must be accurate knowledge of the consuming power of the market. The weak position of many mature businesses today, it was indicated in Mr. Tomajan's article on page 815 of THE IRON AGE of Sept. 24, is caused by over-expansion of plant capacity without duly considering whether the expansion of consumer demand has been in proportion. It is to be questioned if the laying down of some of the more recent additions to the country's steel ingot capacity was preceded by an adequate survey of market possibilities.

One hopeful development is the awakening of large corporations to the first importance of modern propaganda methods. In very recent time steel, oil, copper and transportation were held by their purveyors to be so staple as to rule out any popular advertising appeal. But now, for example, we see messages high in human interest going out with the dividend checks of leading corporations. Copper producers dwell on the long life of copper roofs and conductors and of copper tubing that can be pulled through small openings in walls and floors. Oil companies tell their stockholders what to ask for at the filling station. The trunk line links up the traveler's outlay for its speediest trains with his stockholder profit. And with its last dividend checks the Steel Corporation sent out a stainless steel story in which sales and metallurgical technique were effectively mixed.

Perhaps the key preachment of the article of Sept. 24, alluded to above, was that which urged that manufacturers give up some of the effort that now results only in the competitive shifting of sales volumes and intensively go to work to increase total consumption by finding new markets.

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Setbacks in Production

BEFORE the war, when iron and steel production was growing rapidly, a recession was sometimes appraised by noting how far in time the industry was set back. For instance, in 1908 pig iron was set back about seven years, as it was short of the production in any of the six preceding years, but exceeded production of years earlier than that.

At present production has a comparatively long setback, but there is satisfaction in recalling that the apparently distant years in which there was less production than at present were in their time regarded as very active years industrially. September's steel ingot production was at a rate far above actual production in any year prior to 1905. When the Steel Corporation came into existence, April 1, 1901, the steel industry was regarded as a husky and more or less mature industry, but in the three years prior to 1901 steel production had averaged scarcely one-half of last month's rate.

For another comparison, last month's rate of ingot production was not far below the 1921 total, and it was well above 1908. This year's total will be far above 1921, but that is not significant, as interest centers on the latest news, which is worse than the average of the calendar year.

Steel ingot production has been increasing more rapidly than pig iron production, for the triple reason that steel has been supplanting wrought iron, more scrap is used in steel making, and iron and steel foundry work has not increased as has steel. The setback in pig iron is therefore longer than that in steel ingots. In 1901 pig iron production exceeded last month's rate, but no preceding year did. Prior to 1889 production was not half of last month's rate.

Suggestive that setbacks may not be so serious as they seem to be at first glance is the fact that our record in rail production was made in 1906, a quarter-century ago, and in recent years there has been no thought of that record's being broken. As this is the off time of year in rail production, the current rate is not significant; but it may be noted that even 1930 production was exceeded in 1887, the record year in railroad building. The reasons for the rail showing are well understood and need not be referred to here.

For a sharp contrast we have it that strip mills have been operating at a very low percentage rate of capacity, lower than that shown in various other steel finishing lines. Yet last month's rate of strip production was more than double the actual production of 1921, and was probably in excess of any earlier year excepting 1920. As a tonnage proposition the strip industry is very new. Both demand and capacity have increased by leaps and bounds.

The sheet industry is by no means a new one, yet it makes a showing of the same character as strips, simply less pronounced. Last month's sheet production, as closely as can be estimated, was at a rate in excess of actual production in any year prior to 1912. Thus the sheet industry is set back less than steel in general, and much less than pig iron.

Obviously room is now made for a very substantial rebound from present conditions. The progress in general industry made through 1929 is not lost, its operation being simply suspended.

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Decreases in Exports

IN the general recession in world trade our exports of iron and steel and manufactures thereof declined irregularly. Some classes fell off early, some held out longer. The decreases made such a complicated composite that it is only of late that a general comparison could be made which would be useful in showing the situation so irregularly developed. Our steel production reached its maximum rate in June, 1929, then falling off moderately month by month for four months, while there was a slump in the last two months of the year, after the stock market collapse. Generally speaking, substantial decreases in exports were much slower in developing. Some things would naturally respond more slowly than others to general influences and that is of no particular interest now. The last im-

portant line to slip sharply was electrical machinery and apparatus, which held up fairly well through last December, then having a sizable drop in January. The first seven months of this year make a fairly consistent period for comparison, as there have been no marked changes within the period such as occurred previously as the export movement was going down from the 1929 level.

Two classifications are made, first of iron and steel exports which are reported by weight, second of advanced steel manufactures, not reported by weight, but by value and machinery, implements, etc., also reported by value. Comparison of the first classification, by tonnage, follows:

Exports, Seven-Month Periods

	1929, Gross Tons	Per Cent Decrease to 1930	Per Cent Decrease to 1931
Pig, scrap, ferroalloys	341,061	8.2	72.2
Semi-finished	129,128	16.7	48.6
Rolled and finished	1,316,490	33.9	66.1
Castings and forgings	65,813	17.0	47.2
All other	11,271	25.7	61.1
Total	1,863,763	27.2	65.3

The decrease in total iron and steel exports from the first seven months of 1929 to the first seven months of this year, 65.3 per cent, was made up of the 27.2 per cent decrease shown from 1929 to 1930

and a further decrease of 52.4 per cent from 1930 to 1931.

Exports of manufactures involving iron and steel have decreased in widely varying proportions. The table below follows exactly the Department of Commerce classifications, "advanced manufactures" including cutlery, metal furniture, tools and hardware, the other designations being clear. The last item includes chiefly automobiles, parts and accessories.

Exports, Seven-Month Periods

	Value, 1929	Per Cent Decrease to 1930	Per Cent Decrease to 1931
Advanced manufactures	\$53,799,151	20.8	55.1
Electrical machinery	71,665,765	*1.1	26.8
Industrial machinery	157,609,720	2.4	40.5
Office appliances	33,258,659	16.7	53.0
Printing and bookbinding machinery	12,314,430	19.1	51.2
Agricultural machinery	86,799,048	0.5	40.2
Automobiles and other vehicles	417,685,297	46.2	71.6
Total	\$833,132,070	25.8	56.5

* Increases.

The 56.5 per cent decrease from 1929 to 1931 is made up of a specially large decrease in automobiles and parts, and of a decline in values. Thus in quantities there have been some moderate decreases relative to the 65.3 per cent decrease in tonnage exports.

CORRESPONDENCE

International Trade Now Competitive Suicide

To the Editor: A quick curbstone opinion as to business conditions in western Europe is that in some directions American exports seem to be holding their own, e. g., automobiles, motion pictures, chewing gum and books about Al Capone. The same scene viewed from a motor car gives an impression of unchanged externals. Road-building projects and other public works are frequently in evidence. Although the landscape is peppered with "for sale" and "to let" signs, much as we find it at home, there still appears to be a fair amount of building construction.

Underneath all this rather usual exterior there is much strenuous competition for the ancient title, "The Sick Man of Europe." Like the fox who lost his tail and advocated similar amputations for his colleagues, Russia offers her economic style in hair dressing. Germany by force of habit is as yet no convert of the Muscovite, but she is in the strong position of the man who has nothing and sits alongside of his attorney at a creditors' meeting.

The world has adjusted itself to low prices on Russian goods. From now on we must reconcile ourselves to low German prices on many manufactured articles. In 1921 Germany sent carloads, and in some instances shiploads, of goods beyond her frontiers for sale at any price. Today in desperation she sends her salesmen abroad to quote lower and lower prices for cash on delivery of order. Except for items governed by international sales cartels with German members, the foregoing is the drastic competition afforded Americans in export markets today. So far as possible, every nation in Europe is digging in for a period of economic trench warfare.

Even those last strongholds of free trade, England and Holland, are now preparing specifications for protective tariffs. Thus international trade seems to be a business of competitive suicide. This picture may seem overdrawn in the light of recent heroic political changes in England, but the abnegation of MacDonald and Snowden was accomplished only when England was in extremis.

Similar shakeups are foreordained in other countries. Again and again eminent economists, such as Paish, Schacht, Keynes and Denham, have made eloquent pleas for international cooperation and for a non-political study of reparation payments and other obstacles to recovery. When these writers point out scores of economic absurdities and ask, "What price self-sufficiency?" the nations reply in chorus, "Bigger and better tariff walls." The result of all this is lower commodity prices and a real or disguised dole almost everywhere.

A few years ago we thought we had international cooperation when we were trying to put Germany down. They told us we were making the world safe for democracy, but that beautiful abstraction didn't hurt the Germans very much. Then the Salvation Army began giving the soldiers doughnuts and coffee. This helped quite a lot. But nothing happened to the Germans until conditions became desperate, and then we finally had real international cooperation and it became possible to move out of the trenches and get somewhere.

Today we are all anxious to lift Germany up on her feet. But where are we? Back in the trenches again listening to more abstractions about gold reserves and so on, and not even enough coffee to go round. We know who was able and who insisted on going over the top in a big way in 1918. We had too much Washington then, but that didn't stop the parade. We have too much Washington now, but pretty soon somebody is going to get tired of counting cooties and do something.

A RETURNED TRAVELER.

MARKETS



Automobile Orders May Check Decline in Steel Operations

▲ ▲ ▲
FORD MOTOR CO. Expected to Place Large Tonnage This Week—More Rail Inquiry—Pig Iron and Steel Output at New Lows
 ▼ ▼ ▼

ALTHOUGH the downward trend of steel and pig iron production is still unchecked, with new low records for this cycle having been made in September, some measure of recovery in the final quarter of the year is now indicated by prospective purchases of automobile steel, rails and line pipe.

The Ford Motor Co. is expected to place orders this week for a large tonnage of bars, sheets and strip steel for new models. Other automobile companies, including Chevrolet, have ordered steel for initial production of their 1932 cars. While the trend of automobile output may not be upward before November, the steel companies will benefit from larger rollings this month. The completion of some of the new automobile manufacturing programs is indicated by an order for 25,000 tons of sheets for a builder of bodies.

Rail buying, though likely to be delayed by many roads until the pending freight rate case is decided, is expected to be of fair proportions. The Atlantic Coast Line has come into the market for 25,000 tons, and an inquiry from the Santa Fe for 60,000 tons is looked for soon. The Great Northern has bought 2500 tons for immediate laying.

Line pipe business, which was thought to be virtually over for this year, receives fresh impetus from an inquiry for 170 miles of 20-in. gas pipe for the Continental Construction Co., which is just completing one line of a two-line system from Texas to Chicago.

BUILDING construction may be stimulated if the plans of the Washington administration are successful in creating easier credit conditions. Many construction projects have been held up by difficulties in financing. Moreover, some recent large steel contracts have been affected by legal entanglements. Structural steel lettings in the week were 24,500 tons, of which 8000 tons is for a dirigible dock in California. New building work calls for 26,000 tons of steel.

PRODUCTION of pig iron and steel ingots declined again in September. The daily output of pig iron last month was 38,964 tons, or 5.7 per cent

below the 41,308 tons of August. The decline, however, slowed up, the drop in active blast furnaces of three being the smallest for any month since April. Total output for nine months is 15,018,034 tons, a drop of 41.6 per cent from the corresponding period of 1930.

The September decline in steel ingot production was greater than in pig iron, 10 per cent against 9 per cent in each of the two preceding months. The daily rate of 59,523 tons, though the lowest since 1921, was 22,810 tons a day above the minimum rate in July of that year. In nine months 20,411,736 tons of ingots has been produced, about 37 per cent below the total for the like period last year.

Current steel production is not above 29 per cent of capacity, compared with an average of 28.02 per cent for September, as computed by the American Iron and Steel Institute.

A REDUCTION of 25c. a base box on tin plate to \$4.75, effective for fourth quarter and the first half of 1932, takes the price back to that in effect during most of 1922. The decline has no relation to the recent cut in steel mill wages, but is a concession urged by the can companies, which will in turn pass it along in prices of finished cans to the food packers and growers.

Another price decline is one of \$5 a ton on large rivets, the second of that amount within a few weeks. Bolts and nuts are also weak and subject to extra discounts to large buyers. Otherwise, prices of steel products have stood the test of fourth quarter contracting with considerable firmness.

IN raw materials, however, price weakness is quite evident. Pig iron has been reduced 50c. a ton at Chicago on sizable lots, while Pittsburgh and Valley producers are beset by increasing competition from Lake Erie furnaces. Steel scrap has lost ground at Pittsburgh and Philadelphia, a 25c. a ton decline having occurred in each district, bringing THE IRON AGE composite price for scrap to \$8.83 a gross ton, against \$9 in the previous week and the lowest on record. The pig iron composite has also dropped to a new low of \$15.34, not equaled since 1915.

PITTSBURGH

Large Steel Purchases by Automobile Company Expected This Week

PITTSBURGH, Oct. 6. — The promise of rather heavy purchases of bars, sheets and strip steel by a large maker of automobiles during the week has given the market a much more favorable outlook. It is understood that this steel will be delivered during the latter half of the month and in November, which should bring an immediate upturn to finished steel production at Pittsburgh, Valley and Wheeling district mills. Buying by other consumers in the Detroit district may be expected to follow during the month.

In the meantime, conditions in the steel industry have shown little change. Specifications continue at recent minimum levels. Production in the territory centering at Pittsburgh is still tending downward. In the immediate Pittsburgh district, ingot output ranges from 25 to 26 per cent of capacity, or about the same as last week. Production in the Mahoning and Shenango Valleys also has dropped to about this level, after having been maintained during September at between 30 and 35 per cent. In the Wheeling district, production still averages about 40 per cent of capacity.

Output of finishing mills is unchanged in the aggregate, although tin mill operations have dropped to about 42 per cent and sheet production is slightly higher in the Valleys. Electric weld and seamless pipe mills are holding their own, but recent large orders are being rapidly depleted. Structural capacity is fairly well engaged on backlog tonnage, but the rail mill is still idle and production of bars and plates is not above 25 per cent.

The outstanding price development of the week was a reduction of 25c. a box on tin plate, bringing the quotation to \$4.75 a base box, Pittsburgh, for the remainder of this year and the first half of 1932. The readjustment was not unexpected so far as the larger consumers of tin plate were concerned and was not influenced by the recent wage cut on the part of the large steel companies. Large rivets have also declined \$5 a ton, the second reduction of this amount in a little over a month. Prices on other finished steel products seem to be holding. Bids taken by a large railroad on bars, plates and shapes revealed only one important deviation from the quoted levels with almost a dozen makers participating. Quotations on sheets and strip steel are gradually being tested by fourth quarter contracting and many large consumers have signed up at the full

Large purchases of bars, sheets and strip by automobile company expected this week.

* * *

Steel ingot production still tends downward.

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Tin plate reduced 25c. a base box. Large rivets off \$5 a ton second time within a month.

* * *

Pig iron weak because of competition from Cleveland furnaces.

* * *

Steel scrap off 25c. a ton.

▼ ▼ ▼

quoted levels. This has been particularly true in the case of strip steel.

Raw material prices show weakness. Steel scrap has again declined 25c. a ton and pig iron quotations are muddled because of the competition from outside districts.

SEMI-FINISHED STEEL

A recent inquiry for billets from an Eastern consumer has not been placed in this district. No other test of the market is available, and prices remain quotable at \$29 to \$30 a ton for billets, slabs and sheet bars. Forging billets are fairly well maintained at \$35, and the same quotation is made on wire rods. Demand for rods is very dull.

PIG IRON

Shipments this month are expected to run a little ahead of those of September, as radiator and sanitary ware makers in the district have slightly heavier schedules. There is little change in the rate of shipments to the smaller jobbing foundries, which are buying only for their immediate needs. The larger makers of mill equipment have reduced their requirements slightly. Sellers of Cleveland iron are more active in the Pittsburgh district, and are reported to be making prices which figure back to less than \$15, Cleveland furnace. Local and Valley interests have not been forced to meet these quotations in the immediate Pittsburgh district, but competition has been keen in north central Ohio, particularly in territory normally supplied by Valley producers. Under the circumstances, prices are rather unsettled, but Valley makers are clinging to their official quotation of \$17, furnace, on foundry, malleable and Bessemer iron. The Pittsburgh district furnace is

quoting figures 50c. higher. On basic iron the market is largely nominal, with prices depending entirely upon the circumstances. A comparatively large lot of distress basic iron is reported to have been sold in the Valleys at \$13, furnace. This figure is hardly representative of the market even when Ohio River steel companies are competing for tonnage.

Prices per gross ton, f.o.b. Valley furnace:

Basic	\$15.50 to \$16.00
Bessemer	17.00
Gray forge	16.50
No. 2 foundry	17.00
No. 3 foundry	16.50
Malleable	17.00
Low phos., copper free....	26.66 to 27.00

Freight rate to Pittsburgh or Cleveland district, \$1.76.

Prices per gross ton, f.o.b. Pittsburgh district furnace:

Basic	\$16.00 to \$16.50
No. 2 foundry	17.50
No. 3 foundry	17.00
Malleable	17.50
Bessemer	17.50

Freight rates to points in Pittsburgh district range from 63c. to \$1.13.

BOLTS, NUTS AND RIVETS

The price of large rivets has been reduced \$5 a ton to \$2.25 a 100 lb., Pittsburgh or Cleveland, following a drop of the same amount late in August. The reduction, which is being made by all of the leading producers, was occasioned by further weakness in the old price, and it is suggested that the recent decline may stabilize the market. Bolts and nuts are still quoted at 70 and 10 per cent off list, and small rivets at 70, 10 and 5 per cent off list. While these quotations are not being adhered to in all cases, the extent of shading is not large.

BARS, PLATES AND SHAPES

The market continues very quiet, and is featured only by occasional large orders for structural material. A local fabricator has taken two bridges on Long Island, N. Y., requiring 7000 tons of steel, but the work has been held up temporarily by a taxpayer's suit. Structural awards in the immediate territory are very light, the only outstanding project in sight being the Pittsburgh Post Office, for which plans are not yet ready. Considerable barge business is said to be in the offing, but live inquiry includes less than 50 units, all of which has been mentioned previously. Builders have been asked to quote on considerable other business, for which there is little likelihood of actual award before spring. The railroad market has been featured by the opening of bids on steel for the New York Central, which generally brought out prices of 1.60c., f.o.b. nearest

A Comparison of Prices

Market Prices at Date, and One Week, One Month and One Year Previous,
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron, Per Gross Ton:	Oct. 6, 1931	Sept. 29, 1931	Sept. 8, 1931	Oct. 7, 1930
No. 2 fdy., Philadelphia.....	\$16.26	\$16.26	\$16.26	\$18.76
No. 2 Valley furnace.....	17.00	17.00	17.00	17.50
No. 2 Southern, Cin'ti.....	14.69	14.69	14.69	15.19
No. 2 Birmingham.....	12.00	12.00	12.00	14.00
No. 2 foundry, Chicago.....	17.00	17.50	17.50	17.50
Basic, del'd eastern Pa.....	16.75	16.75	16.75	17.75
Basic, Valley furnace.....	15.50	15.50	15.50	17.00
Valley Bessemer, del'd P'gh..	18.76	18.76	18.76	19.76
Malleable, Chicago*.....	17.00	17.50	17.50	17.50
Malleable, Valley.....	17.00	17.00	17.00	18.00
L. S. charcoal, Chicago.....	25.04	25.04	25.04	27.04
Ferromanganese, seab'd car-				
lots.....	\$85.00	\$85.00	\$85.00	94.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Ferromanganese quotations adjusted to carload unit; larger quantities at discount.

Rails, Billets, etc., Per Gross Ton:	Oct. 6, 1931	Sept. 29, 1931	Sept. 8, 1931	Oct. 7, 1930
Rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	34.00	34.00	34.00	36.00
Revolving billets, Pittsburgh.	29.00	29.00	29.00	31.00
Sheet bars, Pittsburgh.....	29.00	29.00	29.00	31.00
Slabs, Pittsburgh.....	29.00	29.00	29.00	31.00
Forging billets, Pittsburgh...	35.00	35.00	35.00	36.00
Wire rods, Pittsburgh.....	35.00	35.00	35.00	36.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb...	1.60	1.60	1.60	1.60

Finished Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.60	1.60	1.60	1.60
Bars, Chicago.....	1.70	1.70	1.70	1.70
Bars, Cleveland.....	1.65	1.65	1.65	1.65
Bars, New York.....	1.93	1.93	1.93	1.93
Tank plates, Pittsburgh.....	1.60	1.60	1.60	1.60
Tank plates, Chicago.....	1.70	1.70	1.70	1.70
Tank plates, New York.....	1.88	1.88	1.88	1.88
Structural shapes, P'gh.....	1.60	1.60	1.60	1.60
Structural shapes, Chicago...	1.70	1.70	1.70	1.70
Structural shapes, New York.	1.85 1/2	1.85 1/2	1.85 1/2	1.85 1/2
Cold-finished bars, Pittsburgh	2.10	2.10	2.10	2.10
Hot-rolled strips, Pittsburgh..	1.55	1.55	1.55	1.60
Cold-rolled strips, Pittsburgh	2.15	2.15	2.15	2.35

Finished Steel, Per Lb. to Large Buyers:	Oct. 6, 1931	Sept. 29, 1931	Sept. 8, 1931	Oct. 7, 1930
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.40	2.40	2.40	2.40
Hot-rolled annealed sheets, No. 24, Chicago dist. mill..	2.50	2.50	2.50	2.55
Sheets, galv., No. 24, P'gh...	2.90	2.90	2.90	3.00
Sheets, galv., No. 24, Chicago dist. mill.....	3.00	3.00	3.00	3.10
Hot-rolled sheets, No. 10, P'gh	1.70	1.70	1.70	...
Chicago dist. mill.....	1.80	1.80	1.80	...
Wire nails, Pittsburgh.....	1.90	1.90	1.90	2.00
Wire nails, Chicago dist. mill.	1.95	1.95	1.95	2.10
Plain wire, Pittsburgh.....	2.20	2.20	2.20	2.30
Plain wire, Chicago dist. mill.	2.25	2.25	2.25	2.35
Barbed wire, galv., Pittsburgh	2.55	2.55	2.55	2.70
Barbed wire, galv., Chicago dist. mill.....	2.60	2.60	2.60	2.85
Tin plate, 100 lb. box, P'gh...	\$4.75	\$5.00	\$5.00	\$5.00

Old Material, Per Gross Ton:	Oct. 6, 1931	Sept. 29, 1931	Sept. 8, 1931	Oct. 7, 1930
Heavy melting steel, P'gh....	\$10.25	\$10.50	\$10.75	\$14.75
Heavy melting steel, Phila....	8.25	8.50	8.50	13.00
Heavy melting steel, Ch'go....	8.00	8.00	8.25	12.00
Carwheels, Chicago.....	9.50	9.50	9.50	13.50
Carwheels, Philadelphia.....	12.00	12.00	12.00	15.00
No. 1 cast, Pittsburgh.....	10.00	10.00	11.00	13.25
No. 1 cast, Philadelphia.....	11.50	11.50	11.50	13.00
No. 1 cast, Ch'go (net ton)...	8.50	8.50	8.50	11.00
No. 1 RR. wrot., Phila.....	10.00	10.00	10.00	15.00
No. 1 RR. wrot., Ch'go (net)..	7.00	7.00	7.00	9.25

Coke, Connellsville, Per Net Ton at Oven:	Oct. 6, 1931	Sept. 29, 1931	Sept. 8, 1931	Oct. 7, 1930
Furnace coke, prompt.....	\$2.40	\$2.40	\$2.40	\$2.60
Foundry coke, prompt.....	3.50	3.50	3.50	3.50

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York.....	7.37 1/2	7.37 1/2	7.87 1/2	10.12 1/2
Electrolytic copper, refinery..	6.75	6.75	7.25	9.75
Tin (Strait), New York.....	22.25	22.37 1/2	25.62 1/2	27.37 1/2
Zinc, East St. Louis.....	3.37 1/2	3.65	3.80	4.20
Zinc, New York.....	3.92 1/2	4.00	4.15	4.55
Lead, St. Louis.....	3.82 1/2	4.22 1/2	4.22 1/2	5.10
Lead, New York.....	4.00	4.40	4.40	5.25
Antimony (Asiatic), N. Y....	6.55	6.60	6.60	7.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

point on line, by makers in this territory. One Cleveland mill made a price of 1.55c., Cleveland, on bars. The Norfolk & Western has not yet placed the bars, plates and shapes on which it took bids recently. The market on merchant bars is very dull, but there is some promise of automobile buying during the week.

COLD FINISHED STEEL BARS

Contracting during the last few days has been somewhat heavier, but the rate of specifications shows little change. The price of 2.10c., Pittsburgh, has been well maintained on contract tonnage.

RAILS AND TRACK ACCESSORIES

While the local rail mill shared in the recent order of the Chesapeake & Ohio for 45,000 tons of rails, rolling of this material will not get under way before the end of the year. No other orders are reported, and releases have been very light.

WIRE PRODUCTS

Some tonnage in merchant wire products was driven in at the end of the month because of the advanced price, but a few buyers canceled the remainder of their contracts for nails rather than increase their stocks unduly at this time. The market now seems well held at \$1.90 a keg, Pittsburgh, and a little new business has been written at this figure. Manufacturers' wire is holding at 2.20c., Pittsburgh, but releases are very light.

TUBULAR GOODS

With no pipe line projects to report, the pipe market has seemed exceedingly dull in the last week. Mills are still fairly well occupied on electric weld and seamless tonnage placed heretofore, but there is little improvement in production of lapweld or butt-weld material. Some makers believe that colder weather will yet stimulate

a better movement of standard pipe for heating purposes. Oil country goods are listless, and demand for mechanical tubing is about the same.

SHEETS

Demand for sheets has shown little improvement, but an authoritative report that the Ford Motor Co. will place considerable tonnage for its new model during the week has given the market a much brighter tone. It is now indicated that the new Ford model will reach dealers this month, and that November production will show a sharp increase over the two preceding months. This sudden activity is expected to hasten the plans of other motor car builders and lead to a general awakening in the trade at a much earlier date than had been expected. Demand for sheets of other finishes shows no change, and movement of roofing is particularly disap-

THE IRON AGE COMPOSITE PRICES

Finished Steel		Pig Iron	Steel Scrap
Oct. 6, 1931	2.116c. a Lb.	\$15.34 a Gross Ton	\$8.83 a Gross Ton
One week ago	2.116c.	15.42	9.00
One month ago	2.116c.	15.42	9.17
One year ago	2.142c.	16.39	13.25
Based on steel bars, beams, tank plates, wire, rails, black pipe and sheets. These products make 87 per cent of the United States output.		Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.	
Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.			
HIGH LOW		HIGH LOW	HIGH LOW
1931.....	2.142c., Jan. 13; 2.102c., June 2	\$15.90, Jan. 6; \$15.34, Oct. 6	\$11.33, Jan. 6; \$8.83, Oct. 6
1930.....	2.362c., Jan. 7; 2.121c., Dec. 9	18.21, Jan. 7; 15.90, Dec. 16	15.00, Feb. 18; 11.25, Dec. 5
1929.....	2.412c., April 2; 2.362c., Oct. 29	18.71, May 14; 18.21, Dec. 17	17.58, Jan. 29; 14.08, Dec. 3
1928.....	2.391c., Dec. 11; 2.314c., Jan. 3	18.59, Nov. 27; 17.04, July 24	16.50, Dec. 31; 13.08, July 22
1927.....	2.453c., Jan. 4; 2.293c., Oct. 25	19.71, Jan. 4; 17.54, Nov. 1	15.25, Jan. 11; 13.08, Nov. 2
1926.....	2.453c., Jan. 5; 2.403c., May 18	21.54, Jan. 5; 19.46, July 13	17.25, Jan. 5; 14.00, June 1
1925.....	2.560c., Jan. 6; 2.396c., Aug. 18	22.50, Jan. 13; 18.96, July 7	20.83, Jan. 13; 15.08, May 5

pointing. Manufacturing consumers are taking their usual small lots.

Prices seem to have stood up well under the test of fourth quarter contracting. While some of the larger buyers are still placing orders for their immediate needs rather than buying on contract, the market displays a firmer tone than has been in evidence for several months.

TIN PLATE

The American Sheet & Tin Plate Co. on Oct. 1 announced that its official price on tin plate for the fourth quarter of this year and the first half of 1932 would be \$4.75 a base box, Pittsburgh, a decline of 25c. a box from the quotation which has prevailed for about a year. The reduction was not entirely unexpected, as some weakness in the official price had existed for some time. Other makers have followed the lead of the above company, and shipments over the remainder of the year will be made at adjusted levels. The reduction may stimulate specifications to some extent, but not on the part of the largest consumers, who had expected the move. Output this week is somewhat lower, averaging slightly over 40 per cent of capacity.

STRIP STEEL

With important buying from the automobile industry expected during the week, the strip market displays a much more active tone than it has for some time. Miscellaneous consumers have not changed their rate of releases, and mill operations continue at a rate of 15 to 20 per cent of capacity. No change in price is reported, with hot-rolled material quotable at 1.55c. and 1.65c., Pittsburgh, and cold-rolled at 2.15c. to 2.25c. The latter figure applies on very small tonnages, but is still a factor in the market. The 2.15c. quotation has been holding with some of the largest buyers of cold-rolled strip, and developments during the week have not indicated any particular deviation.

COKE AND COAL

Domestic coke has developed additional activity in the last week, but movement is by no means heavy for this time in the year. Furnace grade is unchanged, with the price at \$2.40., Connellsville. Foundry coke is quotable at \$3.25 to \$4.50, the higher figure applying on the premium grades.

OLD MATERIAL

With small sales of heavy melting steel into consumption at \$10.25 and \$10.50 during the last week, the market has declined 25c. a ton for the second consecutive week, and is now quotable at \$10 to \$10.50. While it is difficult for dealers to buy steel scrap at the low end of the range, mill offering prices are low and a

little scrap is coming out from time to time. The closing of several railroad lists during the week will throw additional light on the market. Hydraulic compressed sheets are weaker, a small sale having been made at \$10. This is thought to have been distress material. A buyer of blast furnace scrap has made small purchases during the week at \$7.50 and \$7.75, giving that grade additional strength. Machine shop turnings, on the other hand, are lower because of a hold-up recently instituted at the principal consuming point.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Grades:

No. 1 heavy melting steel...	\$10.00 to \$10.50
No. 2 heavy melting steel...	9.00 to 9.50
Scrap rails	10.25 to 10.75
Compressed sheet steel...	9.75 to 10.25
Bundled sheets, sides and ends	9.50 to 10.00
Cast iron car wheels.....	10.50 to 11.00
Sheet bar crops, ordinary.....	11.00 to 11.50
Heavy breakable cast.....	8.00 to 8.50
No. 2 railroad wrought.....	10.00 to 10.50
Hvy. steel axle turnings.....	9.50 to 10.00
Machine shop turnings.....	7.00 to 7.50

Acid Open-Hearth Grades:

Railr. knuckles and couplers.....	11.50 to 12.00
Railr. coil and leaf springs.....	11.50 to 12.00
Rolled steel wheels.....	11.50 to 12.00
Low phos. billet and bloom ends	13.50 to 14.00
Low phos. mill plates.....	12.00 to 12.50
Low phos. light grades.....	12.00 to 12.50
Low phos. sheet bar crops.....	13.00 to 13.50
Heavy steel axle turnings.....	9.50 to 10.00

Electric Furnace Grades:

Low phos. punchings.....	12.50 to 13.00
Heavy steel axle turnings.....	9.50 to 10.00

Blast Furnace Grades:

Short shoveling steel turnings	7.25 to 7.75
Short mixed borings and turnings	7.25 to 7.75
Cast iron borings.....	7.25 to 7.75

Rolling Mill Grades:

Steel car axles	16.50 to 17.50
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Cupola Grades:

No. 1 cast.....	9.50 to 10.50
Rails 3 ft. and under.....	12.00 to 12.50



Morgan Engineering Co., Alliance, Ohio, has resumed the payment of dividends after several years' lapse, having declared a quarterly dividend of 87½c. to holders of Class A preferred stock, payable Oct. 1.

Warehouse Prices, f.o.b. Pittsburgh

*Base per Lb.

Plates	2.85c.
Structural shapes.....	2.85c.
Soft steel bars and small shapes.....	2.60c.
Reinforcing steel bars.....	2.60c.
Cold-finished and screw stock—	
Rounds and hexagons.....	3.10c.
Squares and flats.....	3.60c.
Bands	2.95c.
Hoops	3.95c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles.....	3.05c.
Galv. sheets (No. 24), 25 or more bundles	3.40c.
Hot-rolled sheets (No. 10).....	3.15c.
Galv. corrug. sheets (No. 28), per square (less than 3750 lb.).....	3.74c.
Spikes, large	2.50c.
Small	2.75c. to 2.90c.
Boat	3.00c.
Track bolts, all sizes, per 100 count, 70 and 10 per cent off list	
Machine bolts, 100 count, 70 and 10 per cent off list	
Carriage bolts, 100 count, 70 and 10 per cent off list	
Nuts, all styles, 100 count, 70 and 10 per cent off list	
Large rivets, base per 100 lb.....	\$3.20
Wire, black, soft ann'd, base per 100 lb.	2.30
Wire, galv. soft, base per 100 lb.....	2.75
Common wire nails, per keg.....	2.05
Cement coated nails, per keg.....	2.05

*On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders of 400 to 999 lb.

CHICAGO

Steel Specifications Gain Slightly— Pig Iron Reduced 50c. a Ton

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CHICAGO, Oct. 6.—Although steel output has been fluctuating slightly from week to week, there has been no definite upturn in a month or more. In the closing days of September, specifications, particularly from small consumers, registered a gain and new buying on a small scale started to climb. The result of this tendency is that local steel mills are increasing output slightly, the average of ingot production now being about 31 per cent of capacity against a shade under 30 per cent late in the last month. The uneven tendencies of orders is being met in part by putting some iron on the ground, but this tonnage is usually small as evidenced by the fact that not infrequently the call for castings from steel mill foundries will use the iron put down in a week. There is an encouraging note in the merchant pig iron market, where tonnages of Northern iron are now available at \$17 a ton, local furnace, and small lots are bringing \$17.50. Sales of this commodity are on a larger scale, and a number of melters clearly signify they are studying needs. Specifications for ferroalloys are the best in months. More evidence is at hand that farm equipment manufacturers are closer to the time when a number of them will expand operations, and automobile parts manufacturers report that inquiries for delivery after the middle of the month are more encouraging. As the situation now stands, there can be under the circumstances little complaint as to support of the market by minor users of steel. Though their requirements are small for this season of the year, they are relatively more active than most large consumers, who usually form the backbone of demand. Pipe plants are reducing schedules, and there is no noticeable gain by fabricators of structural steel or reinforcing bars. The railroad equipment market lends no encouragement to the picture.

FERROALLOYS

Specifications for these commodities are the best in many months. This situation is influenced somewhat by slightly higher steel mill output, but more strongly by small supplies in users' hands. Some thought has been given to the movement of spiegeleisen from England to this district. Most market factors both here and abroad are favorable to such a boat movement. However, consumption here is light and the difficulty of selling a cargo looms large as an obstacle.

Pig iron prices reduced 50c. a ton on sizable orders as sales and inquiries gain.

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Steel specifications and new business make a slight gain.

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Ingot output for Chicago district also increases to 31 per cent of capacity.

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Farm equipment manufacturers expected to expand operations soon.

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Shipping orders for ferroalloys are the largest in months.

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PIG IRON

Northern foundry iron has been reduced 50c. a ton where sizable orders are involved. Quotations now are on the basis of \$17 to \$17.50 a ton, local furnace. A few inquiries of 500 tons each and larger are out, and a number of users have let it be known that they are studying requirements and may soon enter the market. The Southern iron market is steady at \$11 a ton, Birmingham. The movement of this commodity to the Chicago district is in small volume. Consumption of charcoal iron is light.

Prices per gross ton at Chicago:

N'th'n No. 2 fdy., sil. 1.75 to 2.25	\$17.00 to \$17.50
N'th'n No. 1 fdy., sil. 2.25 to 2.75	17.50 to 18.00
Malleable, not over 2.25 sil.	17.00 to 17.50
High phosphorus	17.00 to 17.50
Lake Super. charcoal, sil. 1.50	25.04 to 27.04
S'th'n No. 2 fdy.	17.01
Low phos. sil. 1 to 2, copper free	28.50 to 29.20
Silvery, sil. 8 per cent.	24.79 to 26.79
Bess. ferrosilicon, 14-15 per cent	35.79

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnaces, not including an average switching charge of 61c. per gross ton.

BAR

Consumption of mild steel bars remains close to the level of recent weeks. Small consumers here and there are using slightly more, but large users, who normally give substantial support to the market, offer no indication of heavier requirements. Prices to the manufacturing trade are steady at 1.70c. a lb., Chicago. Word comes from Milwaukee that a large farm implement manufacturer there is

planning to resume operations on about a 25 per cent of capacity basis. Evidence seems to be piling up that several key industries are looking ahead to conditions next winter by delaying production that otherwise might be started about this time. Shipments of alloy steel bars are steady. A number of automobile parts manufacturers in this district report that inquiries for delivery after Oct. 15 are on the increase. Use of iron bars is exceptionally dull. One of the two mills in this district has been closed for an indefinite period. The bulk of rail steel bars now going from local mills is to be used in reinforced concrete. New buying remains sluggish, and specifications are spotty, but in sufficient volume to hold operations near 40 per cent of capacity.

RAILS AND TRACK SUPPLIES

There is little in this market to give it life excepting that it is probable the Santa Fe will soon make formal inquiry for about 60,000 tons of standard-section rails. A few specifications of small size are reaching mills, the aggregate volume being such that one mill has been able to operate without interruption, and this producer is hopeful that releases against new contracts will arrive in time to prevent a shutdown.

CAST IRON PIPE

Milwaukee has accepted the bid of the United States Pipe & Foundry Co. to furnish about 1800 tons of 24 to 54-in. plain pipe at \$34 a ton, delivered. The freight rate from Birmingham to Milwaukee is \$8.40 a ton. The United States company also took 130 tons of lugged pipe and 60 tons of special castings. Marshfield, Wis., has ordered 2100 ft. of 12-in. pipe from Central Foundry Co. Oakhill, Ohio, has postponed lettings and Iron Mountain, Mich., will soon take bids on 2000 ft. of 6-in. pipe. Fort Wayne, Ind., is ready to send out specifications on a new filter plant that will take a round tonnage.

Prices per net ton, deliv'd Chicago: Water pipe, 6-in. and over, \$41 to \$43; 4-in., \$44 to \$46; Class A and gas pipe, \$3 extra.

SHEETS

Prices on these commodities are holding on a miscellaneous run of business that is sustaining operations in the range from 30 to 35 per cent of capacity. Demand from jobbers is dull. Roofing manufacturers have gone so far into their active season at a low rate of activity that sheet sellers look for little from roofers

The Iron Age, October 8, 1931—965

until December, when they usually buy for gutters and the like that are to be prepared for spring delivery. The Milwaukee hot mills are down because of lack of orders.

Base prices per lb., deliv'd from mill in Chicago: No. 24 hot-rolled annealed, 2.55c.; No. 24 galv., 3.05c.; No. 10 hot-rolled, 1.85c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

PLATES

A local steel mill has taken an order for 3000 tons of tank plates which are to be delivered to the Southwest. Local pipe mills are slowing down as old orders near completion, and at the moment there is little in sight in the way of new business in large diameter pipe. Natural gas will be delivered to Chicago in the next few weeks, thereby marking the completion of the first line of the two-line system. The railroad equipment market does not offer encouragement beyond an inquiry from the Texas Co. for 48 gondola cars and 1200 tons of steel with which the Chesapeake & Ohio will repair freight cars. Railroad shops in this district remain on greatly reduced schedules, with no promise of betterment in the near future.

STRIP STEEL

This commodity is moving in limited quantities at 2.15c. a lb., Cleveland. Demand has not risen above the average in the past month, and output remains at about 15 per cent of capacity. Prices for hot-rolled strips are steady, but only small quantities are moving to consumers.

REINFORCING BARS

Outstanding among recent awards is 3500 tons placed by the Sanitary District Trustees, Chicago, for a sewage disposal plant. With this exception, lettings are not impressive and do not reflect what might have been expected from the volume of inquiries issued several weeks ago. Fresh requests for prices are fewer in number, thereby lending to the market an uncertain atmosphere. Shipments of reinforcing bars to Illinois road contractors remain in fair volume, but new specifications are lighter, as is to be expected at this time of year when many old contracts are being completed. The State of Illinois is still sending out road plans for estimating purposes, but much of the tonnage needed will not be delivered before 1932.

WIRE PRODUCTS

The fourth quarter has opened with a fair number of contracts on producers' books. These commitments have been scaled closely to estimated requirements in the coming three months. Specifications from a wide circle of users are slowly turning upward and after two weeks of this trend producers have found it advisable to increase production by a small

margin. Stocks at mills are comparatively small for this time of year and it has taken only a slight upturn in demand to throw them out of balance and necessitate heavier output. Much of this improvement is coming from rural districts, where, as in Oklahoma, sentiment is said to be improving.

BOLTS, NUTS AND RIVETS

Large rivets have been marked off \$5 a ton bringing the quotation to \$2.35 a 100 lb. Demand is extremely dull. Small rivets, use of which is in fair volume, are steady at 70, 10 and 5 per cent off list. Prices on nuts and bolts lack firmness. Use of all these commodities is showing little variation from week to week, though farm equipment manufacturers are beginning to discuss needs and there is good prospect of heavier demand in that direction.

STRUCTURAL MATERIAL

Awards, at about 4000 tons, are not impressive, but may be swelled at any moment by 6000 tons for three public school buildings in Chicago. Fresh inquiries are extremely light, not from the viewpoint of numbers, but because most projects are small. Only a few details are completed on the Chicago Post Office, but it is understood that some steel has been rolled and that some shop work such as on column slabs is under way. Shop operations remain on an unsatisfactory basis, and each inquiry is being subjected to extreme competition.

OLD MATERIAL

Another cargo of iron borings is being gathered here for movement to Lake Erie some time near the end of this month. Prices for local delivery are steady at an average of \$4.25. Production of this grade is relatively small, but consumption in this market is very low and brokers are not hav-

ing great difficulty in making accumulations for water shipment. Use of heavy melting steel has changed little in recent weeks, and dealers are finding difficulty in placing cars as they appear on track. Current railroad lists are fairly large and numerous. With the market as dull as at any time this year, brokers are not inclined to bid except on an item here and there. Offerings are being made by the Milwaukee Road, Michigan Central, New York Central, Pennsylvania, Chesapeake & Ohio and the Pere Marquette.

Prices del'd Chicago dist. consumers
Per Gross Ton

Basic Open-Hearth Grades:

Heavy melting steel.....	\$7.75 to	\$8.25
Shoveling steel	7.75 to	8.25
Frogs, switches and guards, cut apart, and misc. rails	8.00 to	8.50
Factory hyd. comp. sheets	6.50 to	7.00
Drop forge flashings.....	6.00 to	6.50
No. 1 busheling	6.00 to	6.50
Forg'd cast and r'd steel carwheels	8.50 to	9.50
Railroad tires, charg. box size	10.00 to	10.50
Railroad leaf springs cut apart	9.75 to	10.25
Axle turnings.....	6.00 to	6.50

Acid Open-Hearth Grades:

Steel couplers and knuckles	9.00 to	9.50
Coil springs	10.00 to	10.50

Electric Furnace Grades:

Axle turnings	6.00 to	6.50
Low phos. punchings....	10.50 to	11.00
Low phos. plates, 12 in. and under	9.50 to	10.00

Blast Furnace Grades:

Cast iron borings	4.00 to	4.50
Short shoveling turnings..	4.00 to	4.50
Machine shop turnings....	4.00 to	4.50

Rolling Mill Grades:

Rerolling rails	10.00 to	10.50
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Cupola Grades:

Steel rails, less than 3 ft..	10.25 to	10.75
Steel rails, less than 2 ft..	11.00 to	11.50
Angle bars, steel.....	9.25 to	9.75
Cast iron carwheels.....	9.50 to	10.00

Malleable Grades:

Railroad	7.50 to	8.00
Agricultural	7.50 to	8.00

Miscellaneous:

*Relaying rails, 56 to 60 lb.	19.00 to	21.00
*Relaying rails, 65 lb. and heavier	22.00 to	27.00

Per Net Ton

Rolling Mill Grades:

Iron angle and splice bars	8.00 to	8.50
Iron arch bars and transoms	8.50 to	9.00
Iron car axles.....	15.50 to	16.50
Steel car axles.....	11.50 to	12.00
No. 1 railroad wrought...	6.75 to	7.25
No. 2 railroad wrought...	6.75 to	7.25
No. 1 busheling	5.50 to	6.00
No. 2 busheling	4.00 to	4.50
Locomotive tires, smooth..	11.50 to	12.50
Pipes and flues.....	5.50 to	6.00

Cupola Grades:

No. 1 machinery cast....	8.50 to	9.00
No. 1 railroad cast.....	7.00 to	7.50
No. 1 agricultural cast....	7.00 to	7.50
Stove plate	6.25 to	6.75
Grate bars	5.50 to	6.00
Brake shoes	5.75 to	6.25

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.



Dr. Julius Klein, assistant secretary of commerce, has accepted the invitation of Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel, to attend the meeting of the institute at the William Penn Hotel, Pittsburgh, Oct. 12 and 13.

Warehouse Prices, f.o.b. Chicago

Base per Lb.

Plates and structural shapes.....	3.00c.
Soft steel bars.....	2.75c.
Reinforcing bars, billet steel.....	1.55c. to 1.80c.
Rail steel reinforcement—	
For buildings	1.25c. to 1.50c.
Highway slabs.....	1.40c.
For bridges and culverts.....	1.50c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons.....	3.10c.
Flats and squares.....	3.60c.
Bands, ½ in. (in Nos. 10 and 12 gages)	2.95c.
Hoops (No. 14 gage and lighter) ..	3.50c.
Hot-rolled annealed sheets (No. 24) ..	3.55c.
Galv. sheets (No. 24).....	4.10c.
Hot-rolled sheets (No. 10).....	3.20c.
Spikes (¾ in. and larger).....	3.45c.
Track bolts	4.30c.
Rivets, structural	4.00c.
Rivets, boiler.....	4.00c.

Per Cent Off List

Machine bolts	73
Carriage bolts	73
Coach and lag screws.....	73
Hot-pressed nuts, sq. tap, or blank..	73
Hot-pressed nuts, hex., tap, or blank..	73
No. 8 black ann'l'd wire, per 100 lb..	\$3.45
Com. wire nails, base per keg.....	2.30
Cement c't'd nails, base per keg....	2.30

CLEVELAND

Automobile Buying for New Models Slow to Materialize—Steel Operations Off

CLEVELAND, Oct. 6.—The finished steel market was very dull the past week. Improvement in the demand from the motor car industry, which was indicated by a recent gain in inquiry for bars, sheets and strip steel, has as yet failed to materialize, automobile manufacturers not having placed business with parts makers from whom they have taken quotations. Generally, steel consumers in other fields are not experiencing any upturn in their business.

Steel plant operations in Cleveland again declined this week, one producer shutting down an open-hearth furnace. These plants this week are operating at 32 per cent of ingot capacity.

Delay of automobile manufacturers in placing substantial tonnages of steel is regarded as confirmation of reports that they will go slow in bringing out new models and will not put these on the market until the January automobile shows, meantime producing enough to supply their dealers. This should assure fair production schedules in the last few weeks of the year.

While pig iron became slightly more active the past week, none of the increase is attributed to the motor car industry. The Ford Motor Co. is expected to make large purchases of malleable castings for its new models, but definite inquiries for these have not come out. Prices generally are firm and few buyers are attempting to secure concessions because of the wage reduction. Another \$5 a ton reduction has been made on rivets. Concessions reported on cold-rolled strip appear to be limited to one or two very small producers and have not weakened the firmness generally prevailing on this product.

PIC IRON

Sales of foundry iron increased moderately the past week. Orders for lots ranging from carloads up to 100 tons were more numerous than for a long time and came from all sections served by Lake furnaces. This seems to indicate an exhaustion of stocks rather than any marked gain in melt. All the business was for prompt shipment. Foundries are not showing interest in purchasing for future requirements. Shipments are holding to about the September rate. An improvement in the demand from the motor car industry has failed to materialize, and this is attributed to the general policy of delay adopted by leading automobile manufacturers in getting under production on new models. Regular quotations are being maintained on small-lot orders.

There has been no recent price test on round tonnages. Lake furnaces quote foundry and malleable iron at \$16 to \$17 for Ohio and Indiana, \$17 for Michigan, and \$17, Cleveland, for local shipment.

Prices per gross ton at Cleveland:

N'th'n fdy., sil. 1.75 to 2.25.....	\$17.00
S'th'n fdy., sil. 1.75 to 2.25.....	17.01
Malleable	17.00
Ohio silvery, 8 per cent.....	24.00
Stand. low phos., Valley.....	27.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 50c. average local switching charge; \$3 from Jackson, Ohio; \$6.01 from Birmingham.

BARS, PLATES AND SHAPES

Orders were fairly numerous the past week, but were mostly for very small lots. The structural field was very quiet both in lettings and new inquiry. The Cleveland sewage disposal plant will take 900 tons of structural shapes in addition to 4700 tons of reinforcing bars and, with sheet steel piling, will require approximately 7000 tons of steel. An Ohio shop has placed 2300 tons of plates for car repair work. Demand for bars from the motor car industry continues light. Prices are steady at 1.65c. for steel bars for local delivery and outside shipment and 1.60c., Pittsburgh, for plates and shapes.

RAILS AND TRACK SUPPLIES

The Chesapeake & Ohio railroad has sent out an inquiry for track fastenings, including spikes, tie plates and angle bars for the 45,000 tons of rails recently placed. The Nickel Plate, Erie and Pere Marquette railroads are not expected to come out for their 1932 rail requirements until after the first of the year.

SHEETS

The slight improvement noted last week has not been maintained. Sales during the week were limited largely to scattering small-lot orders. Automobile manufacturers, which recently secured quotations from stamping plants for prices on parts for new car models, are still withholding orders, and as a result sheet business from these sources is scarce. A Valley district fabricator is reported to have taken a culvert order from the State of Pennsylvania that will require 6500 tons of galvanized sheets to be supplied by an allied mill. Prices are firm.

STRIP STEEL

With little business from the motor car industry, demand continues light. Hot-rolled strip is more active than cold-rolled material. Hot-rolled strip is firm at 1.65c., Pittsburgh, for nar-

row and 1.55c. for wide. Cold-rolled strip is quoted at 2.15c., Cleveland.

IRON ORE

Shipments of Lake Superior ore are declining, and the movement by water for the season will be less than 24,000,000 tons, according to present estimates. Shippers are planning for a very early closing, and not many cargoes will be moved in November. September shipments by water amounted to 4,178,761 tons, compared with 5,064,687 tons in August. Total shipments to Oct. 1 were 19,952,768 tons, a decrease of 48.92 per cent, compared with the same period last year.

BOLTS, NUTS AND RIVETS

Rivet manufacturers have again reduced prices on large rivets \$5 a ton to \$2.25 a 100 lb., Cleveland and Pittsburgh. This is the second similar reduction in a month and is attributed to an extremely competitive situation. Small rivets are unchanged. Bolts and nuts continue dull and irregular. An additional 10 per cent from the 73 and 10 per cent discount is rather general, and an even greater concession has been made to some large jobbers.

OLD MATERIAL

No new business is coming from consumers, and there is virtually no buying by dealers, as both Cleveland and Valley district mills are holding up shipments against contracts. Under the circumstances, dealers are making little effort to make sales. While prices are unchanged, all quotations are nominal.

Prices per gross ton delivered consumers' yards:

Basic Open-Hearth Grades:	
No. 1 heavy melting steel..	\$8.50 to \$9.00
No. 2 heavy melting steel..	7.50 to 8.00
Compressed sheet steel...	7.50 to 7.75
Light bundled sheet stampings	6.50 to 7.00
Drop forge flashings.....	6.75 to 7.00
Machine-shop turnings....	5.00 to 5.50
Short shoveling turnings..	6.50 to 7.00
No. 1 railroad wrought...	9.50 to 10.00
No. 2 railroad wrought...	10.00 to 10.50
No. 1 busheling	6.75 to 7.00
Pipes and flues	5.50 to 6.00
Steel axle turnings.....	7.50 to 8.00
Acid Open-Hearth Grades:	
Low phos., billet bloom and slab crops.....	14.00 to 14.50
Blast Furnace Grades:	
Cast iron borings.....	6.50 to 6.75
Mixed borings and short turnings	6.50 to 6.75
No. 2 busheling	6.00 to 6.25
Cupola Grades:	
No. 1 cast	10.00 to 10.50
Railroad grate bars.....	6.00 to 6.50
Stove plate	6.00 to 6.50
Rails under 3 ft.....	15.00 to 15.50
Miscellaneous:	
Rails for rolling	13.00 to 13.50
Railroad malleable	11.00 to 11.25

NEW YORK

Steel and Pig Iron Demands Reflect Continued Low State of Industry

NEW YORK, Oct. 6.—Interest in pig iron reflects no perceptible improvement in the local district. Sales for the week aggregated about 2500 tons, compared with 3000 tons the week before and 3500 tons two weeks ago. An inquiry for 1000 tons of foundry iron for fourth quarter delivery is reported, but otherwise demand is keeping pace with the exceptionally low rate of foundry operations. With prospective orders usually restricted to small lots, sellers are not inclined to make concessions in present price schedules. Buffalo iron is reported to be held at a minimum of \$15 a ton, furnace, although in the absence of any sizable tonnages this figure is untested. With the base price of eastern Pennsylvania iron at \$15.50 to \$16, furnaces in that district are not experiencing the competition from outside districts encountered earlier in the year. Southern iron at \$11 a ton, Birmingham, has not been an important factor in Northern markets for the past two months.

Prices per gross ton, delivered New York district:

*Buff. No. 2, del'd east.	
N. J.	\$17.78 to \$18.28
East. Pa. No. 2 fdy., sil.	
1.75 to 2.25.....	16.89 to 17.39
East. Pa. No. 2X fdy., sil.	
2.25 to 2.75.....	17.89 to 18.39

Freight rates: \$1.39 to \$2.52 from eastern Pennsylvania.

*Prices delivered to New Jersey cities having rate of \$3.28 a ton from Buffalo.

CAST IRON PIPE

Demand for pressure pipe continues to be light. The only outstanding inquiry is for 1300 tons of 6 and 8-in. pipe for New York. Hartford, Conn., placed 150 tons of 8 and 10-in. with R. D. Wood & Co., and Massachusetts is expected to close this week on about 400 tons of 8 and 16-in. for the Medfield State Hospital.

Prices per net ton delivered New York: Water pipe, 6-in. and larger, \$32.90; 4-in. and 5-in., \$35.90; 3-in., \$42.90. Class A and gas pipe, \$3 extra.

FINISHED STEEL

Signs of the usual autumn improvement in steel orders are still lacking, and the steel trade sees the need of some strong influences that will restore general confidence in business and in the financial soundness of the country before there can be any substantial recovery in steel. The news from Washington today that steps were to be taken by the administration in that direction was reassuring.

Aside from the reduction of the price of tin plate to \$4.75 a base box, effective Oct. 1, and a further de-

cline of \$5 a ton on large rivets, the price situation is reasonably stable. Wire products have gained strength.

REINFORCING BARS

Quotations are unchanged at 1.60c., Pittsburgh, or 1.93c., New York, with concessions of \$1 and more a ton on desirable tonnages. Projects are generally small, in most instances calling for under 100 tons of bars. The Laurel Heights Sanitarium at Shelton, Conn., which was originally specified for structural steel, has been redesigned for reinforced concrete.

OLD MATERIAL

On No. 1 heavy melting steel shipments to eastern Pennsylvania, brokers are offering \$8 a ton, delivered, a reduction of 50c. a ton, based on two recent sales to the mill at Coatesville, Pa., at \$8.50 a ton, delivered. Barge shipments are still going forward to Buffalo, N. Y., at \$6.25 a ton, on barge, New York harbor. The consumer of blast furnace scrap at Swedeland, Pa., has suspended further shipments of this grade, but brokers are still able to offer about

\$2 a ton, New York, for shipment to the consumer at Monessen, Pa.

Dealers' buying prices per gross ton, f.o.b. New York:

No. 1 heavy melting steel..	\$4.50 to \$6.25
Heavy melting steel (yard)	3.00
No. 1 hvy. breakable cast.	6.00
Stove plate (steel works)...	2.50
Locomotive grate bars....	3.50
Machine shop turnings....	2.00
Short shoveling turnings..	2.00
Cast borings (blast fur. or steel works)	2.50
Mixed borings and turnings	2.00
Steel car axles	12.75 to 13.00
Iron car axles	15.00 to 15.50
Iron and steel pipe (1 in. dia., not under 2 ft. long)	5.50 to 6.00
Forge fire	3.25 to 3.75
No. 1 railroad wrought...	8.25
No. 1 yard wrought, long..	7.25
Rails for rolling.....	6.25 to 6.75
Stove plate (foundry)....	4.75 to 5.50
Malleable cast (railroad)...	6.50 to 7.00
Cast borings (chemical)...	8.00 to 8.50

Prices per gross ton, deliv'd local foundries:

No. 1 machinery cast.....	\$8.50
No. 1 hvy. cast (columns, bldg. materials, etc.; cupola size).....	6.50
No. 2 cast (radiators, cast boilers, etc.)	5.50

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A. O. Smith Corp., Milwaukee, reports annual net earnings of \$3,234,439 after all charges and taxes equal after preferred dividends to \$6.20 a share on the 500,000 common shares outstanding. This compares with \$5,425,649, or \$10.66 a share, in the preceding fiscal year. The common stock is on a \$2 annual dividend basis. Cash on hand at the end of the last fiscal year totaled \$5,274,893, compared with \$549,249 as of July 30, 1930.

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Illinois highway contracts totaling over \$32,000,000 are to be awarded this fall and winter, according to a statement by Frank Sheets, State road engineer. This program is expected to provide work for between 3000 and 3500 men during the winter months and about 24,500 in the early spring.

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Orders for enameled sanitary ware in August totaled 142,588 pieces, against 178,377 in July, according to reports received by the Bureau of the Census from 21 manufacturers who comprise practically the entire industry.

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Sales of mechanical stokers for use in large commercial and high pressure steam plants totaled 132 units of 31,171 hp. in August, against 101 of 20,735 hp. in July.

Warehouse Prices, f.o.b. New York

Base per Lb.

Plates and struc. shapes....	2.70c. to 3.10c.
Soft steel bars, small shapes.	2.70c. to 3.10c.
Iron bars	3.24c.
Iron bars, Swed. charcoal..	7.00c. to 7.25c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons.....	3.40c.
Flats and squares	3.90c.
Cold-roll. strip, soft and quarter hard	4.95c.
Hoops	3.75c.
Bands	3.40c.
Hot-rolled sheets (No. 10)...	3.00c. to 3.25c.
Hot-rolled ann'd sheets (No. 24*)	3.50c.
Galvanized sheets (No. 24*)...	4.00c.
Long terne sheets (No. 24)....	5.00c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galv. annealed	5.15c.
Tire steel, 1/2 x 1/2 in. and larger..	3.40c.
Smooth finish, 1 to 2 1/2 x 1/4 in. and larger	3.75c.
Open-hearth spring steel, bases,	
4.50c. to 7.00c.	

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Per Cent

Machine bolts, cut thread:	Off List
3/4 x 6 in. and smaller..	.65 to .65 and 10
1 x 30 in. and smaller..	.65 to .65 and 10
Carriage bolts, cut thread:	
1/2 x 6 in. and smaller..	.65 to .65 and 10
3/4 x 20 in. and smaller..	.65 to .65 and 10
Boiler Tubes:	Per 100 Ft.
Lap welded, 2-in.....	\$19.00
Seamless steel, 2-in.....	20.25
Charcoal iron, 2-in.....	26.25
Charcoal iron, 4-in.....	67.00

PHILADELPHIA

Improved Buying For Stock— Contracting Unusually Small

PHILADELPHIA, Oct. 6.—Small steel orders are in better volume, partly as a result of jobber and consumer activity in replenishing and expanding stocks. While this buying movement contrasts with the inactivity of the past few months, neither buyers nor sellers suggest that it is indicative of a permanent improvement in business. Meanwhile, mill operations are unchanged at an average of 26 per cent of capacity and prices are fairly firm in the absence of tonnage business that might develop some concessions. Contracting for fourth quarter delivery has been smaller than for any previous quarter this year.

Small construction projects continue to be a feature of the market, among which is a plan to build 60 steel garages and two washrooms at Shunk and Oregon Avenues by the Girard Estate. Final action is expected about Oct. 15 in the award of two ocean-going car transports for the Overseas Railway Co., requiring 11,000 tons of plates. The Baldwin Locomotive Works has placed 350 tons of plates for a chance coal separator at St. Nicholas, Pa., with an eastern Pennsylvania plate mill. A Government archives building in Washington will require about 5000 tons of fabricated structural steel.

PIG IRON

Foundry iron buying is limited to lots of a carload to 100 tons and prices are unchanged at \$16 a ton, furnace, with concessions of 50c. a ton on the more desirable tonnages. Southern foundry iron is no longer a factor in eastern Pennsylvania, with sellers maintaining \$11 a ton, Birmingham. The furnace at Swedeland, Pa., is scheduled to be blown out next week, leaving only the furnaces at Bethlehem, Pa., still active in eastern Pennsylvania.

Prices per gross ton at Philadelphia:

East. Pa. No. 2, 1.75 to 2.25 sil.	\$16.26 to \$16.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	16.76 to 17.26
East. Pa. No. 1X, 1.75 to 2.25 sil.	17.26 to 17.76
Basic (del'd east. Pa.)	16.75
Malleable	19.00 to 20.00
Stand. low phos. (f.o.b. east. Pa. furnace)	23.00 to 24.00
Cop. b'rg low phos. (f.o.b. furnace)	22.00 to 23.00
Va. No. 2 plain, 1.75 to 2.25 sil.	22.04
Va. No. 2, 2.25 to 2.75 sil.	22.54

Prices, except as specified otherwise are deliv'd Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

STEEL BARS

Demand for small lots of merchant bars has improved slightly. Prices are unchanged. Billet steel reinforcing bars are still quoted at 1.60c., Pittsburgh, or 1.89c., Philadelphia,

with concessions of \$1 and more a ton on desirable business. Current reinforced concrete projects are in most cases small, requiring under a carload lot of reinforcing bars.

PLATES

Inquiry has improved slightly, and mills are booking an increased number of small orders, well distributed over the field of plate consumers. The price is being maintained, but is not tested by any sizable business. One of the most important plate orders in eastern Pennsylvania recently is 350 tons required by the Baldwin Locomotive Works for a chance coal separator at St. Nicholas, Pa.

SHAPES

Fabricating shops are bidding on a slightly larger number of small construction projects, including a sales and office building on South Thirty-sixth Street, Philadelphia, for the Whitegood Realty Co.

SHEETS

Warehouses are buying slightly increased tonnages from the mills, but consumers are still ordering only small lots for prompt shipment. Operating rates of sheet users in this district are generally unchanged. One of the sizable sheet tonnages in prospect is 300 tons or more for ventilating duct work in the new Pennsylvania Railroad terminal at West Philadelphia.

IMPORTS

In the week ended Oct. 3, 500 tons of chrome ore arrived at this port from British India, 100 tons of ferromanganese from Yugoslavia, and 50 tons of pig iron from British India.

OLD MATERIAL

One eastern Pennsylvania consumer of No. 1 heavy melting steel is reported to have closed on a small tonnage at \$8.50 a ton, to be delivered

by a broker. The mill at Phoenixville, Pa., is accepting delivery of stove plate at \$7 a ton, delivered, and some No. 2 heavy melting steel. Otherwise the market is quiet, with sales limited to occasional transfers of distress carloads.

Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel	\$8.00 to \$8.50
No. 2 heavy melting steel	7.00
No. 1 railroad wrought	10.00 to 10.50
Bundled sheets (for steel works)	6.00
Hydraulic compressed, new	7.00 to 7.50
Hydraulic compressed, old	6.00 to 6.50
Machine shop turnings (for steel works)	5.50 to 6.00
Heavy axle turnings (or equiv.)	8.00 to 8.50
Cast borings (for steel works and roll. mill)	5.50 to 6.00
Heavy breakable cast (for steel works)	9.50 to 10.00
Railroad grate bars	7.50
Stove plate (for steel works)	7.50
No. 1 low phos., hvy. (0.04% and under)	12.00 to 13.00
Couplers and knuckles	11.00
Roller steel wheels	11.00
No. 1 blast furnace	5.50
Wrot. iron and soft steel pipe and tubes (new specific.)	10.50 to 11.00
Shafting	15.00 to 15.50
Steel axles	16.00 to 16.50
No. 1 forge fire	7.50 to 8.00
Cast iron carwheels	12.00 to 12.50
No. 1 cast	11.00 to 11.50
Cast borings (for chem. plant)	11.50 to 12.00
Steel rails for rolling	10.50

Par Value for Pound to Rule in Canadian Duties

WASHINGTON, Oct. 6.—Suspension of the gold standard with resulting depreciation of the pound will provide no advantage to Great Britain in moving exports to Canada. The view that such an advantage would arise was dispelled in a Canadian order in council, effective Sept. 30.

The order reads as follows:

"Having regard to the disturbed conditions of the rates of exchange between Great Britain and Canada, the Acting Minister of Revenue orders and directs that in computing the value for duty on goods imported into Canada from Great Britain, the rate of exchange shall be fixed at \$4.86% to the pound sterling, being the par value thereof."

Coming upon the heels of this order was an official announcement in Japan that there will be no interference with the free outward movement of gold from that country and that the Yokohama specie bank may ship \$25,000,000 to \$30,000,000 to the United States. The announcement was learned here through a radio-gram from Commercial Attaché Halleck Butts, Tokio. It also stated that some European shippers are reported to be quoting prices to Japan on a dollar rather than a pound sterling or other currency basis.

CINCINNATI Pig Iron Business Confined to Single-Car Orders

CINCINNATI, Oct. 6.—The beginning of the fourth quarter has brought no change in the local pig iron market. Melters are interested only in immediate needs. Shipments on old contracts, however, are almost up to date, so that the market would quickly reflect any change in conditions. Actual bookings last week were 1135 tons, all in single car orders. A recent inquiry from Indiana for 1000 tons of Southern iron is still open, since Southern furnaces refuse to grant concessions.

Prices per gross ton, deliv'd Cincinnati:
Ala. fdy., sil. 1.75 to 2.25.....\$14.69
Ala. fdy., sil. 2.25 to 2.75..... 15.19
Tenn. fdy., sil. 1.75 to 2.25..... 14.69
S'th'n Ohio silvery, 8 per cent..... 23.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

FINISHED STEEL

Bookings by district sheet mills dipped last week from the level of the preceding two-week period. Road construction demand is tapering, while other sheet consuming industries have not increased their requirements. Demand and production are at about 35 per cent of capacity output.

OLD MATERIAL

A little scrap is being accepted by district mills, but no new business is

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and struc. shapes.....	3.25c.
Bars, soft steel or iron.....	3.00c.
New billet reinfrc. bars.....	3.00c.
Rail steel reinfrc. bars.....	3.00c.
Hoops.....	3.90c.
Bands.....	3.20c.
Cold-fin. rounds and hex.....	3.50c.
Squares.....	4.00c.
Hot-rolled annealed sheets (No. 24).....	3.75c.
Galv. sheets (No. 24).....	4.25c.
Hot-rolled sheets (No. 10).....	3.30c.
Structural rivets.....	4.20c.
Small rivets.....	60 per cent off list
No. 9 ann'd wire, per 100 lb.....	\$3.00
Com. wire nails, base per keg (25 kegs or more).....	2.95
Cement c'd nails, base 100-lb. keg.....	2.95
Chain, per 100 lb.....	10.25
Net per 100 Ft.	
Seamless steel boiler tubes, 2-in.....	\$17.50
4-in.....	36.00
Lap-welded steel boiler tubes, 2-in.....	16.50
4-in.....	34.50

reported. Dealers' bids are unchanged.

Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:

Heavy melting steel.....	\$7.00 to \$7.50
Scrap rails for melting.....	9.00 to 9.50
Loose sheet clippings.....	3.50 to 4.00
Bundled sheets.....	6.00 to 6.50
Cast iron borings.....	3.75 to 4.25
Machine shop turnings.....	4.00 to 4.50
No. 1 busheling.....	5.50 to 6.00
No. 2 busheling.....	3.50 to 4.00
Rails for rolling.....	9.50 to 10.00
No. 1 locomotive tires.....	9.00 to 9.50
No. 2 railroad wrought.....	7.00 to 7.50
Short rails.....	12.50 to 13.00
Cast iron car wheels.....	9.00 to 9.50
No. 1 machinery cast.....	10.50 to 11.00
No. 1 railroad cast.....	9.50 to 10.00
Burnt cast.....	4.25 to 4.75
Stove plate.....	4.25 to 4.75
Brake shoes.....	4.25 to 4.75
Agricultural malleable.....	8.00 to 8.50
Railroad malleable.....	9.00 to 9.50

BIRMINGHAM Lincoln, Neb., Cast Iron Pipe Order Aids Alabama Plants

BIRMINGHAM, Oct. 6.—Only a limited amount of contract tonnage has been placed for the fourth quarter and not very much is expected. Buying remains largely on a spot basis, with orders covering weekly requirements. One order of 1000 tons is reported, also several ranging from 200 to 400 tons. The pipe order secured by the United States Pipe & Foundry Co. and the National Cast Iron Pipe Co., from Lincoln, Neb., will provide a sizable tonnage. September shipments did not take care of the month's production and were somewhat lower than those of August. District tonnage quotations are still \$12 and for northern markets, \$11. During the past few days eight furnaces have been in blast, a temporary increase of one. The Tennessee company lighted Fairfield No. 6 on Sept. 28 and is to blow out Fairfield No. 5 on Wednesday or Thursday of this week. Of the eight active, six are on foundry and two on basic.

Prices per gross ton, f.o.b. Birmingham dist. furnaces:
No. 2 fdy., 1.75 to 2.25 sil.....\$12.00
No. 1 fdy., 2.25 to 2.75 sil..... 12.50
Basic..... 12.00

FINISHED STEEL

The slight improvement of the past several weeks is continuing. The market is not particularly active, but there are upward tendencies and gains over some weeks ago. Present demand is distributed among various lines, rather than concentrated on a few. Sheet contracts for the fourth quarter are at a fair rate, and so are those for wire products. Shipments of wire products have been more active during the past two weeks, as contract commitments under old prices were taken. Fabricators of structural steel and reinforcing bars booked only a small amount of new business last week. Chicago Bridge & Iron Works is fabricating 22 storage tanks for a new oil refinery to be built at Mobile. Open-hearth operations are down to seven. Gulf States Steel took off one on Oct. 3 and now has two active. The Tennessee company continues with five.

CAST IRON PIPE

The order for 32,000 tons placed by Lincoln, Neb., will be produced by

Birmingham plants. A major portion will be made at the North Birmingham and Bessemer plants of the United States Pipe & Foundry Co., while the remainder will be handled by the National Cast Iron Pipe Co. This is the largest order of the year booked by Birmingham plants and will serve to maintain operations through the winter months. In view of the efforts being made by municipalities to provide winter work for the unemployed, it is expected additional tonnages, in smaller amounts, will be available from Northern points. Duluth, Minn., has bought about 400 tons from National Cast Iron Pipe. Two towns north of Chicago are planning to place orders as late as December. Other current business remains on a carload basis and aggregate tonnage is not large. Plant operations range from 30 to 35 per cent.

OLD MATERIAL

Shipments on contracts vary from week to week. Last week some of the foundries increased their requirements, but, on the other hand, one of the steel mills ordered a curtailment. Current buying is slight. Revisions have been made in some quotations, short shoveling turnings now being quoted at \$5.50, stove plate at \$6, and rails for rolling at \$10.50 to \$11.

Prices per gross ton deliv'd Birmingham dist. consumers' yards:

Heavy melting steel.....	\$8.50 to \$9.00
Scrap steel rails.....	8.50
Short shoveling turnings.....	6.50
Cast iron borings.....	(No market)
Stove plate.....	7.00
Steel axles.....	15.00 to 16.00
Iron axles.....	18.00
No. 1 railroad wrought.....	8.00
Rails for rolling.....	11.50 to 12.00
No. 1 cast.....	9.00
Tramcar wheels.....	10.00 to 10.25
Cast iron borings, chem....	13.50

Detroit Scrap Market Presents Mixed Trend

DETROIT, Oct. 6.—With transactions in meager volume, the scrap market is showing a mixed price trend. Heavy melting steel, No. 1 busheling, hydraulic bundles and flashings are down 25c. a ton. On the other hand, cast iron grades are reflecting the increased activity in foundries supplying dies and other castings for new motor car models, No. 1 machinery cast having advanced 50c. a ton.

Dealers' buying prices per gross ton, f.o.b. cars, Detroit:

Hvy. melting and shov. steel.....	\$6.25 to \$6.75
Borings and short turnings.....	4.50 to 5.00
Long turnings.....	4.00 to 4.50
No. 1 machinery cast.....	8.50 to 9.00
Automotive cast.....	11.00 to 11.50
Hydraul. comp. sheets.....	6.00 to 6.50
Stove plate.....	5.00 to 5.50
New No. 1 busheling.....	5.00 to 5.50
Old No. 2 busheling.....	3.25 to 3.75
Sheet clippings.....	3.50 to 4.00
Flashings.....	5.25 to 5.75

ST. LOUIS

Pig Iron Users Still Hesitant in Making Forward Commitments—Scrap Weaker

ST. LOUIS, Oct. 6.—The opening of the fourth quarter finds no material change in the market for pig iron. There has been a slight improvement in buying of small lots for prompt shipment, especially by manufacturers of heating appliances, who are enjoying a seasonal trade, but melters, for the most part, decline to contract for any large tonnage for shipment during the remainder of the year. Jobbing foundries report some improvement in the demand for automobile and miscellaneous castings. Despite the small amount of buying, the market remains firm at unchanged prices.

Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25 f.o.b.	
Granite City, Ill.	\$17.50
Malleable, f.o.b. Granite City	17.50
N'th'n No. 2 fdy., deliv'd St. Louis	19.66
Southern No. 2 fdy., deliv'd	15.42
Northern malleable, deliv'd	19.66
Northern basic, deliv'd	19.66

Freight rates: 75c. (average) Granite City to St. Louis; \$2.16 from Chicago; \$1.42 from Birmingham.

FINISHED STEEL

The reduction of 25c. a base box on tin plate, effective Oct. 1, has had no effect in the buying of this material, in which there is at present a seasonal decline in consumption. The new price is \$4.75, f.o.b. Pittsburgh, or \$4.85, f.o.b. Gary. The market for plates, shapes and bars is quiet.

The only local structural award of the week went to Stupp Brothers Bridge & Iron Co., 497 tons of plate girder spans for the Missouri Pacific Railway. The St. Louis-San Francisco Railway has inquired for 109 tons for a bridge at Lindenwood, near here.

OLD MATERIAL

The scrap market continues stagnant. Mills in the St. Louis industrial district maintain their embargo against shipments against contracts, although during the last week there were acceptances here and there of a carload or more. Because of the

attitude of the mills, which is due to a lack of new business, the dealers are buying almost nothing. The largest district consumer of busheling and borings is out of the market, and these items are 25c. a ton lower. No. 1 heavy melting or shoveling steel, railroad malleable and No. 2 railroad wrought also are 25c. lower.

Railroad lists: Pennsylvania, 16,825 tons; Baltimore & Ohio, 2325 tons; Chicago, Milwaukee, St. Paul & Pacific, 110 carloads; Nashville, Chattanooga & St. Louis, nine carloads, and St. Louis-San Francisco, seven carloads.

Dealers' buying prices per gross ton, f.o.b. St. Louis district:

Selected heavy melting steel	\$7.75 to \$8.25
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No. 1 heavy melting or shoveling steel	\$7.25 to \$7.75
No. 2 heavy melting or shoveling steel	7.00 to 7.50
No. 1 locomotive tires	9.00 to 9.50
Misc. stand.-sec. rails including frogs, switches and guards, cut apart	8.50 to 9.00
Railroad springs	8.75 to 9.25
Bundled sheets	5.00 to 5.50
No. 2 railroad wrought	7.25 to 7.75
No. 1 busheling	6.00 to 6.50
Cast iron borings and shoveling turnings	5.00 to 5.50
Iron rails	7.00 to 8.00
Rails for rolling	10.50 to 11.00
Machine shop turnings	3.00 to 3.50
Heavy turnings	6.00 to 6.50
Steel car axles	11.50 to 12.00
Iron car axles	15.00 to 15.50
Wrot. iron bars and trans.	6.00 to 6.50
No. 1 railroad wrought	5.00 to 5.50
Steel rails, less than 3 ft.	11.00 to 11.50
Steel angle bars	7.50 to 8.00
Cast iron carwheels	6.75 to 7.25
No. 1 machinery cast	8.00 to 8.50
Railroad malleable	6.25 to 6.75
No. 1 railroad cast	7.50 to 8.00
Stove plate	7.00 to 7.50
Relay. rails, 60 lb. and under	16.00 to 16.50
Relay. rails, 70 lb. and over	20.00 to 21.00
Agricult. malleable	6.50 to 7.00

BUFFALO

Republic Steel Operating Bar Mills This Week at 60 Per Cent

BUFFALO, Oct. 6.—About 2500 tons of pig iron was sold in this district the past week. Business is fairly steady but in small lots, mostly car loads. September proved to be a better shipping month than August. Foundry melt in this district is about 30 per cent of capacity. Two interests are adhering to a \$16 base on Eastern shipments, while the others will apparently dip to \$15, Buffalo.

Prices per gross ton, f.o.b. furnace:

No. 2 fdy., sil. 1.75 to 2.25	\$17.00
No. 2X fdy., sil. 2.25 to 2.75	17.50
No. 1 fdy., sil. 2.75 to 3.25	18.50
Malleable, sil. up to 2.25	17.50
Basic	17.00
Lake Superior charcoal	25.28

FINISHED STEEL

The Lackawanna plant of the Bethlehem Steel Co. continues to operate 11 open-hearths. After an inactive week, Republic Steel Corp. has resumed this week with three open-hearths and with bar mills at 60 per cent of capacity. Wickwire Spencer is operating two open-hearths and Seneca Iron & Steel Co. is running about 30 to 35 per cent. A new State agricultural college at Ithaca, N. Y., will require 500 tons of structural steel. A medical arts building in Watertown, N. Y., will require 200 tons of structural steel.

OLD MATERIAL

The market is without any general signs of activity. One concern sold 1000 tons of No. 1 heavy melting steel at \$9, with a small amount of No. 2 heavy melting steel at \$7.50. There have been some scattering sales of No. 1 machinery cast and stove plate. One of the recent important stove plate sales was negotiated at \$9 to \$9.50, Dunkirk. A sale of short shoveling turnings was at \$7 to \$7.50, Niagara frontier point. Borings and turnings are scarcer due to low ma-

chine shop operation. A sale of short rails was made at \$12.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades:	
No. 1 heavy melting steel	\$9.00
No. 2 heavy melting scrap	7.50 to 8.00
Scrap rails	9.50 to 10.00
Hydraul. comp. sheets	7.50
No. 2 hydraul. comp. sheets	7.00
Hand bundled sheets	7.50
Drop forge flashings	7.50 to 8.00
No. 1 busheling	8.00 to 8.50
Hvy. steel axle turnings	4.50 to 5.00
Machine shop turnings	7.50 to 8.00
No. 1 railroad wrought	
Acid Open-Hearth Grades:	
Knuckles and couplers	10.50 to 11.00
Coll and leaf springs	10.50 to 11.00
Roller steel wheels	10.50 to 11.00
Low phos. billet and bloom ends	12.50 to 13.00
Electric Furnace Grades:	
Short shov. steel turnings	6.50 to 7.00
Blast Furnace Grades:	
Short mixed borings and turnings	6.00 to 6.50
Cast iron borings	6.00 to 6.50
No. 2 busheling	4.50 to 5.00
Rolling Mill Grades:	
Steel car axles	15.00 to 15.50
Iron axles	16.00 to 16.50
Cupola Grades:	
No. 1 machinery cast	10.00 to 10.50
Stove plate	8.25 to 8.50
Locomotive grate bars	7.00 to 7.50
Steel rails, 3 ft. and under	12.00 to 12.50
Cast iron carwheels	10.50 to 11.00
Malleable Grades:	
Industrial	10.00 to 10.50
Railroad	10.00 to 10.50
Agricultural	10.00 to 10.50
Special Grades:	
Chemical borings	9.00 to 9.50

Warehouse Prices, f.o.b. St. Louis

Base per Lb.	
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.00c.
Cold-fin. rounds, shafting, screw stock	3.35c.
Hot-rolled annealed sheets (No. 24)	3.80c.
Galv. sheets (No. 24)	4.35c.
Hot-rolled sheets (No. 10)	3.45c.
Black corrug. sheets (No. 24)	3.85c.
Galv. corrug. sheets	4.40c.
Structural rivets	4.00c.
Boiler rivets	4.00c.
Per Cent Off List	
Tank rivets, 3/4-in. and smaller, 100 lb. or more	65
Less than 100 lb.	60
Machine bolts	73
Carriage bolts	73
Lag screws	73
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more	73
Less than 200 lb.	63
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more	73
Less than 200 lb.	63

Warehouse Prices, f.o.b. Buffalo

Base per Lb.	
Plates and struc. shapes	3.25c.
Soft steel bars	3.00c.
Reinforcing bars	2.65c.
Cold-fin. flats and sq.	3.65c.
Rounds and hex.	3.15c.
Cold-rolled strip steel	5.25c.
Hot-rolled annealed sheets (No. 24)	3.70c.
Galv. sheets (No. 24)	4.10c.
Bands	3.35c.
Hoops	3.90c.
Hot-rolled sheets (No. 10)	3.50c.
Com. wire nails, base per keg	\$2.45
Black wire, base per 100 lb.	3.20

BOSTON

Pig Iron Sales Increase Slightly—Scrap Transactions Are Still Small

BOSTON, Oct. 6.—Pig iron sales the past week were about 1700 tons, the largest for any one week in some time. One 100-ton lot was sold, but business otherwise was in car lots and generally for prompt delivery, including Indian iron at \$19 to \$20 a ton, on dock here, duty paid. Increased sales follow a very slight increase in the aggregate New England melt. A Rhode Island melter is in the market for 150 to 200 tons of No. 2X and special analysis iron.

Foundry iron prices per gross ton deliv'd to most New England points:

*Buffalo, sil. 1.75 to 2.25..	\$19.91
*Buffalo, sil. 2.25 to 2.75..	19.91
†Buffalo, sil. 1.75 to 2.25..	19.28
†Buffalo, sil. 2.25 to 2.75..	19.28
*Ala., sil. 1.75 to 2.25.....	\$20.11 to 20.61
*Ala., sil. 2.25 to 2.75.....	20.61 to 21.11
†Ala., sil. 1.75 to 2.25.....	16.75
†Ala., sil. 2.25 to 2.75.....	17.25

Freight rates: \$4.91 all rail and \$4.28 rail and water from Buffalo; \$9.61 all rail from Alabama and \$5.75 rail and water from Alabama to New England seaboard.

*All rail rate.

†Rail and water rate.

CAST IRON PIPE

Massachusetts closed bids on 350 tons of 6 to 16-in. pipe for a State hospital at Medfield, and will make an award this week. South Hadley, Mass., may soon be in the market for pipe.

REINFORCING BARS

The award of 425 tons of bars by Rhode Island for a State pier at Providence to the Kalman Steel Co. leaves the market bare of prospective tonnages of size. Buying of small tonnages has shrunk to a low level due to the inability of people wanting to build to secure funds from banks. Prices quoted openly from stock are:

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates	*3.35c.
Structural shapes—	
Angles and beams.....	*3.35c.
Tees	*3.35c.
Zees	*3.35c.
Soft steel bars, small shapes.....	*3.25c.
Reinforcing bars	3.10c. to 3.25c.
Iron bars—	
Refined	3.25c.
Best refined	4.60c.
Norway rounds	6.60c.
Norway squares and flats.....	7.10c.
Spring steel—	
Open-hearth	5.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	*3.75c. to 4.25c.
Hoop steel	4.90c. to 5.40c.
Cold-rolled steel—	
Rounds and hex.....	3.50c. to 5.50c.
Squares and flats.....	4.00c. to 6.00c.
Toe calk steel.....	6.00c.
Rivets, structural or boiler.....	4.80c.
Per Cent Off List	
Machine bolts .....	.65 and 5
Carriage bolts .....	.65 and 5
Lag screws .....	.65 and 5
Hot-pressed nuts .....	.40 and 10
Cold-punched nuts .....	.40 and 10
Stove bolts .....	.70 and 10

*Base price (250 to 999 lb.): less than 250 lb., add 50c. per 100 lb.; 1000 to 7999 lb., deduct 15c.; 8000 to 14,999 lb., deduct 25c.; 15,000 lb. and larger lots, deduct 35c.

Billet bars, 1 to 5-ton lots, 3c. a lb., base; 6 to 99 tons, 2.40c.; 100-ton lots and larger, 2.30c. Rail steel bars, 2.26½c. a lb., delivered. These prices are rarely obtained, however, due to keen competition among sellers.

OLD MATERIAL

Most of the small shipments the past week consisted of No. 1 heavy melting steel and long bundled skeleton for Worcester, Mass., consumption, and breakable cast for Pennsylvania delivery. Breakable cast is 50c. a ton lower at \$5.10 a ton, on cars, shipping point. Prices otherwise are unchanged. Owing to the decline in the value of the Canadian dollar, Canadian railroads are collecting a surcharge of 10 per cent of all freight charges on shipments originating in the United States, to enable them to

pay the United States railroads their full portion of freight charges in United States currency. This surcharge ruling holds until Oct. 17, at which time a further announcement will be made.

Buying prices per gross ton, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel..	\$4.10 to \$4.80
Scrap T rails.....	4.10 to 4.80
Scrap girder rails.....	3.10 to 3.50
No. 1 railroad wrought....	4.50 to 5.00
Machine shop turnings....	1.25 to 2.10
Cast iron borings (steel works and rolling mill)	1.50 to 1.75
Bundled skeleton, long....	3.00 to 3.25
Forge flashings	3.00 to 3.50
Blast furnace borings and turnings	0.85 to 1.25
Forge scrap	2.00 to 2.50
Shafting	10.00 to 10.50
Steel car axles.....	11.00 to 12.00
Wrought pipe, 1 in. in diameter (over 2 ft. long)	4.00 to 4.25
Rails for rolling.....	8.50 to 9.00
Cast iron borings, chemical	7.00 to 7.25
No. 2 cast.....	4.85 to 5.00

Prices per gross ton deliv'd consumers' yards:

Textile cast	\$9.50 to \$10.00
No. 1 machinery cast.....	9.50 to 10.00
Stove plate	5.00 to 5.25
Railroad malleable	10.50 to 11.00

CANADA

Some Steel Plants May Be Shut Down Unless Business Improves

TORONTO, Oct. 5.—Canadian steel mills are experiencing a shortage of new business, and there are reports that some plants may shut down entirely in the early future unless business takes a turn for the better. For some time there has been very little business from Canadian railroads, and the opinion is held by steel interests that little in new rail and rolling stock orders can be looked for this year. The railroads are continually reporting lower earnings, and it is understood that retrenchment will be in order for the coming year and will have direct bearing on purchases of new equipment.

An official announcement by H. J. Kelley, general manager of the Dominion Steel & Coal Co., Ltd., Sydney, N. S., is that, unless the company receives a substantial rail order within the next two weeks, virtually the whole plant will be temporarily shut down by Oct. 12. The wire mills will continue to operate as at present until orders are completed, which will be about Oct. 20. The company has had no blast furnace in service for upward of three months.

A somewhat similar state of affairs faces the Algoma Steel Corp., at Sault Ste. Marie. The rail mill was closed down several weeks ago, and there is no indication at the moment that this department will start up again in the near future.

The Steel Co. of Canada, Ltd., has reduced operations generally and has very little business on its books. Some sales are being made in small lots, but booking generally is slow.

PIG IRON

New business is holding at the rate

of the past few weeks. Very few melters have placed forward contracts, and blast furnace representatives do not look for much in this respect for the remainder of the year. Prices are unchanged.

Prices per gross ton:

	Delivered Toronto
No. 1 fdy., sil. 2.25 to 2.75.....	\$22.60
No. 2 fdy., sil. 1.75 to 2.25.....	22.10
Malleable	22.60
	Delivered Montreal
No. 1 fdy., sil. 2.25 to 2.75.....	\$24.00
No. 2 fdy., sil. 1.75 to 2.25.....	23.50
Malleable	24.00
Basic	\$23.00 to 23.50

OLD MATERIAL

Stagnation holds in this market. Mills are out of the market for steel scrap, and shipments to the Hamilton district are negligible. Orders are appearing for iron grades, but the demand is spotty. Some scrap is being exported to European countries and small lots to the United States. Dealers are out of the market but well stocked. Prices are unchanged.

Dealers' buying prices for old material: Per Gross Ton

	Toronto	Montreal
Heavy melting steel....	\$7.00	\$6.00
Rails, scrap	7.00	6.00
No. 1 wrought.....	6.00	8.00
Machine shop turnings....	2.00	2.00
Boiler plate	5.00	4.50
Heavy axle turnings....	2.50	2.50
Cast borings	2.00	2.00
Steel borings	2.00	2.00
Wrought pipe	2.00	2.00
Steel axles	7.00	9.00
Axles, wrought iron....	7.00	11.00
No. 1 machinery cast.....	.....	10.00
Stove plate .....	.....	8.00
Standard carwheels.....	.....	8.50
Malleable .....	.....	8.00

Per Net Ton

No. 1 machinery cast....	11.00	.....
Stove plate	9.00	.....
Standard carwheels	10.00	.....
Malleable scrap	9.00	.....

PACIFIC COAST

Navy Department Awards 8000 Tons of Steel for Dirigible Dock

SAN FRANCISCO, Oct. 5.—Representatives of several Eastern mills report that September brought the lowest volume of orders for the year, and yet warehouse business and contracts gave every evidence of increasing slightly in recent weeks. Continued receipt of tonnages of foreign finished steel, together with the aggressive attitude of Pacific Coast mills in holding their volume, make it difficult for Eastern suppliers to compete in the present market.

The Navy Department awarded the 8000-ton contract for the steel frame for the dirigible dock at Sunnyvale, Cal., to the Wallace Bridge & Structural Steel Co., Seattle. It is generally supposed that the fabricating will be done at some point on San Francisco Bay, though it may be shipped by water from an Eastern mill, complete and ready to erect.

Thirteen cities in southern California, including Los Angeles, Long Beach, Pasadena and Glendale, composing the Metropolitan Water District, voted five to one in favor of \$220,000,000 bond issue to bring water by the so-called Parker route from the Colorado River 50 miles below Needles, Cal., by canal and tunnel 265 miles to the Los Angeles area. Preliminary estimates provide more than \$1,500,000 for steel penstocks and \$700,000 for steel siphons.

BARS

In an unusually quiet week, awards totaled 425 tons and new inquiries aggregated 600 tons on open major contracts. Contracts for 1340 tons for four California highway projects are due to be placed during the coming week.

CAST IRON PIPE

Bids opened in Oakland, Cal., showed American Cast Iron Pipe Co. low on

1150 tons, and Pacific States Cast Iron Pipe Co. was low on 350 tons. The former company's bid, deducting ocean freight, is on the basis of approximately \$23 a ton, Birmingham. New inquiries for 200 tons were reported.

STEEL PIPE

Preliminary plans have been announced for a sprinkling system and water supply distributing lines at Benton Field, a new Army aviation base at Alameda, Cal.

STRUCTURAL SHAPES

Including the Sunnyvale dirigible dock, awards totaled 9000 tons for the week, with an additional 2600 tons in projects for which general contracts have been let without definite steel placement. The Third Street bascule bridge in San Francisco, which will be erected by Barrett & Hilp for \$552,590, will take 1500 tons. New inquiries total 825 tons.

Youngstown

Sheet Mill Schedules Improved as Result of Automobile Orders

YOUNGSTOWN, Oct. 6.—For the first full week in October, sheet and strip mill schedules in the Mahoning Valley show some acceleration, reflecting broadened requirements from the automobile industry. Of 120 sheet mills in the Valley, 35 are occupied at the beginning of the week, compared with 20 the preceding week. Sheet mill resumption were made at the Campbell plant of the Youngstown Sheet & Tube Co., where eight mills were placed in operation; six at the Niles property of the Mahoning Valley Steel Co., and five at the Warren works of the Republic Steel Corp. In addition, the Republic company is operating sheet capacity at Niles, while the Sharon Steel Hoop Co. has sheet mills engaged at Youngstown. Indications are that sheet units at the Brier Hill works of the Sheet & Tube company will be placed in operation shortly, following prolonged idleness.

At Greenville, Pa., the railroad shops of the Bessemer & Lake Erie Railroad enlarge production, effective Oct. 12, to 66 per cent, from 33 per cent. More than 1000 workers benefit.

Steel ingot production is likely to be stepped up during the week. At the start, 21 of 66 open-hearth furnaces are melting, including 14 of the 51 units maintained by the independents, and seven open-hearths at the Ohio works of the Carnegie Steel Co. Two

of three Bessemer properties in the Valley are engaged.

Steel pipe departments are being maintained at a fairly good rate, especially in electric welding and seamless tube divisions.

Machine Tool Builders Complete Cost Manual

The National Machine Tool Builders' Association has completed the work initiated three years ago of preparing a cost manual. The manual is to be issued in ring binder form, each chapter being a separate unit, so that any may be rewritten and replaced without disturbance of any other material.

Announcing the completion of the manual, the association says: "Since the machine tool builders' cost finding problems are not essentially different from those of any other machine shops, the manual is a general work which can be used in practically any machine shop. It shows methods for the small shop as well as methods for the large shop whose executive problems naturally require more detailed accounting if executive control is to be had. It is thoroughly up-to-date in its treatment of such subjects as standard costs, machine hour burden rates, inventory control, operation time control and others of that nature."

The work has been carried out under direction of Albert E. Grover, Berea, Ohio, who was selected by the association because of his many years experience in machine shop and foundry cost work. Mr. Grover gave up his private practice to devote his full time to the association's program. During the past three years he has carefully studied the methods in use, not only in machine tool shops but in other machine shops as well. He has selected the best methods he found for each phase of cost work. For final publication the manual was submitted to 23 regional and general conferences of accountants and executives of the industry, to which accountants of other machinery building concerns were also invited. All of the suggestions developed in these conferences were considered and the best embodied in the text. After the text was written, it was in turn gone over carefully by an editing committee of three highly qualified cost executives of the industry.

Mr. Grover will return to his private practice but an arrangement has been made whereby he will continue to serve the association in a consulting capacity.

Orders for porcelain enameled flat ware in August were valued at \$638,431, against \$690,801 in July, according to reports received by the Bureau of the Census from 26 establishments.

F.O.B. Warehouse Prices

(Less than 5000 Lb.)

	Base per Lb.—		
	San Francisco	Los Angeles	Seattle
Plates and struc. shapes, 1/4-in. and heavier	2.80c.	3.00c.	2.25c.
Soft steel bars....	2.80c.	3.00c.	2.25c.
Reinforcing bars..	2.80c.	2.80c.	3.00c.
Hot-rolled annealed sheets (No. 24)..	3.90c.	4.00c.	3.50c.
Hot-rolled sheets (No. 10)	3.40c.	3.50c.	3.00c.
Galv. sheets (No. 24)	4.40c.	4.20c.	4.00c.
Struc. rivets, 1/2 in. and larger, less than 1000 lb....	5.00c.	5.00c.	5.50c.
Special nails: common 4 to 60d; smooth box 4 to 20d; finish 6 and 8d; base per keg	\$2.55	\$2.45	\$2.40
Other wire nails, base per keg....	2.80	2.70	2.65
Cement c'd nails, 100-lb. keg	2.65	2.70	2.65

▲▲ Semi-Finished Steel, Raw Materials, Bolts and Rivets ▲▲

MILL PRICES OF SEMI-FINISHED STEEL

Billets and Blooms	
	Per Gross Ton
Rerolling, 4-in. and under 10-in., Pittsburgh	\$29.00
Rerolling, 4-in. and under 10-in., Youngstown	29.00
Rerolling, 4-in. and under 10-in., Cleveland	29.00
Rerolling, 4-in. and under 10-in., Chicago	31.00
Forging quality, Pittsburgh	35.00

Sheet Bars	
	Per Gross Ton
Pittsburgh	\$29.00
Youngstown	29.00
Cleveland	29.00

Slabs	
	Per Gross Ton
(8 in. x 2 in. and under 10 in. x 10 in.)	
Pittsburgh	\$29.00
Youngstown	29.00
Cleveland	29.00

Skelp	
	Per Lb.
(F.o.b. Pittsburgh or Youngstown)	
Grooved	40c.
Universal	40c.
Sheared	50c.

Wire Rods	
	Per Gross Ton
(Common soft, base)	
Pittsburgh	\$15.00
Cleveland	15.00
Chicago	16.00

PRICES OF RAW MATERIAL

Ores	
	Per Gross Ton
Lake Superior Ores, Delivered Lower Lake Ports	
Old range Bessemer, 51.50% iron	\$4.80
Old range non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.65
Mesabi non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40
Foreign Ore, c.i.f. Philadelphia or Baltimore	
Per Unit	
Iron ore, low phos., copper free, 55 to 58% iron, dry, Spanish or Algerian	8c. to 9c.
Iron ore, low phos., Swedish, average 68% iron	10.00c.
Iron ore, basic or foundry, Swedish, average 65% iron	9.00c.
Iron ore, basic and foundry, Russian, average 63% iron	9.00c.
Manganese ore, washed 52% manganese, from the Caucasus	25c. to 26c.
Manganese ore, African or Indian, 50 to 52%	23c. to 24c.
Manganese ore, Brazilian, 46 to 48%	22c. to 23c.
Tungsten ore, high grade, per unit, in 60% concentrates	\$12.00 to \$12.50
Per Gross Ton	
Chrome ore, 45% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard	\$20.00
Chrome ore, 48% Cr ₂ O ₃ , c.i.f. Atlantic seaboard	22.50

Coke	
	Per Net Ton
Furnace, f.o.b. Connellsville prompt	\$2.40
Foundry, f.o.b. Connellsville prompt	\$3.25 to 4.50
Foundry, by-product, Ch'go ovens	7.50
Foundry, by-product, New England, del'd	10.50
Foundry, by-product, Newark or Jersey City, delivered	8.70 to 9.10
Foundry, by-product, Phila.	9.00
Foundry, Birmingham	5.00
Foundry, by-product, St. Louis, f.o.b. ovens	8.00
Foundry, by-product, del'd St. Louis	9.00

Coal	
	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.40 to \$1.50
Mine run coking coal, f.o.b. W. Pa.	1.50 to 1.60
Gas coal, 3 $\frac{1}{4}$ -in., f.o.b. Pa. mines	1.70 to 1.80
Mine run gas coal, f.o.b. Pa. mines	1.50 to 1.60
Steam slack, f.o.b. W. Pa. mines	.60 to .75
Gas slack, f.o.b. W. Pa. mines	.60 to .75

Ferromanganese	
	Per Gross Ton
Domestic, 80%, seaboard	*\$80.00 to \$85.00
Foreign, 80%, Atlantic or gulf port, duty paid	*80.00 to 85.00

Spiegeleisen	
	Per Gross Ton Furnace
Domestic, 19 to 21%	\$28.00 to \$30.00

Electric Ferrosilicon	
	Per Gross Ton Delivered
50%	\$83.50
75%	130.00
Furnace	
10%	\$35.00
11%	37.00
12%	39.00
14 to 16%	31.00

Bessemer Ferrosilicon	
	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
10%	\$25.00
11%	26.00
12%	27.00
13%	\$29.00
14%	31.00
15%	33.00

Silvery Iron	
	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
6%	\$20.00
7%	20.50
8%	21.00
9%	21.50
10%	22.00
11%	\$23.00
12%	24.00
13%	26.00
14%	28.00
15%	30.00

Other Ferroalloys	
Ferrotungsten, per lb. contained metal del'd, carloads	\$1.08
Ferrotungsten, less carloads	\$1.15 to 1.25
Ferrocromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.00c.
Ferrocromium, 2% carbon	17.00c. to 17.50c.
Ferrocromium, 1% carbon	19.00c. to 20.00c.
Ferrocromium, 0.10% carbon	24.50c. to 26.00c.
Ferrocromium, 0.06% carbon	26.50c. to 28.00c.
Ferrovandium, per lb. contained vanadium, f.o.b. furnace	\$3.15 to \$3.65
Ferrocobaltititanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	\$160.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base per gross ton	91.00
Ferromolybdenum, per lb. contained Mo., delivered	1.00
Calcium molybdate, per lb. contained Mo., delivered	85c.

Ferrophosphorus, electric, 24%, f.o.b. Aniston, Ala., per gross ton	\$122.50
Silico spiegel, per ton, f.o.b. furnace, car lots	42.50
Ton lots or less, per ton	47.50
Silico-manganese, gross ton, delivered:	
2.50% carbon grade	105.00
1% carbon grade	115.00
Spot prices	\$5 a ton higher

Fluxes and Refractories	
	Per Net Ton
Fluorspar	
Domestic, 85% and over calcium fluoride, not over 5% silicon, gravel, f.o.b. Illinois and Kentucky mines	\$13.00
No. 2 lump, Illinois and Kentucky mines	17.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid	17.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 $\frac{1}{2}$ % silicon, f.o.b. Illinois and Kentucky mines	32.00

Fire Clay Brick	
	Per 1000 f.o.b. Works
High-Heat Duty Brick	
Intermediate Heavy Duty Brick	
Pennsylvania	\$40.00 to \$35.00
Maryland	40.00
New Jersey	\$44.00 to 59.00
Ohio	40.00
Kentucky	40.00
Missouri	37.00
Illinois	40.00
Ground fire clay, per ton	6.50

Silica Brick	
	Per 1000 f.o.b. Works
Pennsylvania	\$40.00
Chicago	49.00
Birmingham	50.00
Silica clay, per ton	8.00

Magnesite Brick	
	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick	
	Per Net Ton
Standard size	\$45.00

MILL PRICES OF BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts	
	Per Cent Off List
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)	
Machine bolts	73 and 10
Carriage bolts	73 and 10
Lag bolts	73 and 10
Plow bolts, Nos. 1, 2, 3 and 7 heads	73 and 10
Hot-pressed nuts, blank or tapped, square	73 and 10
Hot-pressed nuts, blank or tapped, hexagons	73 and 10
C.p.e. and t. square or hex. nuts, blank or tapped	73 and 10
Washers*	7.00c. to 6.75c. per lb. off list

*F.o.b. Chicago, New York and Pittsburgh.
†Bolts with rolled thread up to and including $\frac{1}{2}$ in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts	
	Per Cent Off List
Semi-finished hexagons nuts	73 and 10
Semi-finished hexagons castellated nuts, S.A.E.	73 and 10
Stove bolts in packages, P'gh.	80, 10, 10, 10 and 5
Stove bolts in packages, Ch'go.	80, 10, 10, 10 and 5
Stove bolts in pkgs., Cleveland	80, 10, 10, 10 and 5
Stove bolts in bulk, P'gh.	80, 10, 10, 10, 5 and 2 $\frac{1}{2}$
Stove bolts in bulk, Ch'go.	80, 10, 10, 10, 5 and 2 $\frac{1}{2}$
Stove bolts in bulk, Cleveland	80, 10, 10, 10, 5 and 2 $\frac{1}{2}$
Tire bolts	80, 10, 10, 10, 5 and 2 $\frac{1}{2}$

Discounts of 73 and 10 per cent off on bolts and nuts apply on carload business with jobbers and large consumers.

Large Rivets	
	Base per 100 Lb.
($\frac{1}{2}$ -in. and larger)	
F.o.b. Pittsburgh or Cleveland	\$2.25
F.o.b. Chicago	2.35

Small Rivets	
	Per Cent Off List
($\frac{1}{8}$ -in. and smaller)	
F.o.b. Pittsburgh	70, 10 and 5
F.o.b. Cleveland	70, 10 and 5
F.o.b. Chicago	70, 10 and 5

Cap and Set Screws	
	Per Cent Off List
(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)	
Milled cap screws	80, 10, 10 and 5
Milled standard set screws, case hardened	80 and 5
Milled headless set screws, cut thread	75 and 10
Upset hex. head cap screws, U.S.S.S. thread	85 and 10
Upset hex. cap screws, S.A.E. thread	85 and 10
Upset set screws	80, 10 and 5
Milled studs	70

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel	Base per Lb.
Pittsburgh mill	1.60c.
Chicago	1.70c.
Philadelphia	1.89c.
New York	1.93c.
Cleveland	1.65c.
Lackawanna	1.70c.
Birmingham	1.70c.
Pacific ports	2.00c.
Billet Steel Reinforcing	
P'gh mills, 40, 50, 60-ft.	1.60c.
Birmingham, mill lengths	1.75c.
Cleveland	1.55c. to 1.60c.
Rail Steel	
mills, east of Chicago dist.	1.30c. to 1.35c.
Chicago Heights mill	1.60c.
Philadelphia	1.49c. to 1.59c.
Iron	
Common iron, f.o.b. Chicago	1.70c.
Refined iron, f.o.b. P'gh mills	2.75c.
Common iron, del'd Philadelphia	2.09c.
Common iron, del'd New York	2.14c.

Tank Plates

	Base per
Pittsburgh mill	1.60c.
Chicago	1.70c.
Birmingham	1.70c.
Cleveland	1.78 1/2c.
Philadelphia	1.80 1/2c.
Cantonville	1.70c.
Sparrows Point	1.70c.
Lackawanna	1.70c.
New York	1.88c.
Pacific ports	1.85c. to 1.90c.

Structural Shapes

	Base per Lb.
Each Pittsburgh mill.....	1.60c.
Each Chicago.....	1.70c.
Each Birmingham.....	1.70c.
Each Lackawanna.....	1.70c.
Each Bethlehem.....	1.70c.
De'd Cleveland.....	1.78 1/2c.
De'd Philadelphia.....	1.71c. to 1.76c.
De'd New York.....	1.85 1/2c.
C.I.f. Pacific ports.....	2.05c.

Hot-Rolled Hoops, Bands and Strips

	Base per Lb.
6 in. and narrower, Pittsburgh.	1.65c.
Wider than 6 in., P'gh.	1.55c.
6 in. and narrower, Chicago.	1.75c.
Wider than 6 in., Chicago.	1.65c.
Copperage stock, P'gh.	1.75c. to 1.85c.
Copperage stock, Chicago.	1.85c. to 1.95c.

Cold-Finished Steel

	Base per Lb.
Bars, f.o.b. Pittsburgh mill.....	2.10c.
Bars, f.o.b. Chicago.....	2.10c.
Bars, Cleveland.....	2.10c.
Bars, Buffalo.....	2.10c.
Shifting, ground, f.o.b. mill.....	2.45c. to 3.40c.
Strips, P'gh.....	2.15c. to 2.25c.
Strips, Cleveland.....	2.15c. to 2.25c.
Strips, deliv'd Chicago.....	2.43c. to 2.53c.
Strips, Worcester.....	2.30c.
Fender stock, No. 20 gage, Pittsburgh or Cleveland.....	3.20c.

*According to size.

Wire Products

Carload lots, f.o.b. Pittsburgh and Cleveland)	
To Manufacturing Trade	
Bright wire	2.20c.
Spring wire	3.20c.
To Jobbing Trade	

To Jobbing Trade

	Base per Ken
Standard wire nails.....	\$1.90
Smooth coated nails.....	1.90
Galvanized nails.....	3.90

To Retail Trade

Smooth annealed wire.....	2.35c.
Smooth galvanized wire.....	2.80c.
Polished staples.....	2.35c.
Galvanized staples.....	2.60c.
Harbed wire, galvanized.....	2.55c.
Woven wire fence, Nos. 9 and 11 gage, per net ton.....	\$55.00
Woven wire fence, No. 12 1/2 gage and lighter, per net ton.....	60.00

To Retail Trade

	Base per Ken
Standard wire nails.....	\$2.00
Smooth coated nails.....	2.00
Galvanized nails.....	4.00
	Base per Lb.
Smooth annealed wire.....	2.45c.
Smooth galvanized wire.....	2.90c.

Anderson, Ind., mill prices are ordinarily a ton over Pittsburgh base; Duluth, Minn., and Worcester, Mass., mill \$2 a ton over Pittsburgh, and Birmingham mill \$3 a ton over Pittsburgh.

Sheets

Hot-Rolled	Base per Lb.
No. 10, f.o.b. Pittsburgh	1.70c.
No. 10, f.o.b. Chicago mills	1.80c.
No. 10, del'd Philadelphia	1.99c.
No. 10, f.o.b. Birmingham	1.85c.
No. 10, c.i.f. Pacific Coast ports	2.35c.
Hot-Rolled and Annealed	
No. 10, Pittsburgh	1.85c.
No. 10, Chicago mills	1.95c.
No. 10, Birmingham	2.00c.
Hot-Rolled Annealed	
No. 24, f.o.b. Pittsburgh	2.40c.
No. 24, f.o.b. Chicago mills	2.50c.
No. 24, del'd Philadelphia	2.69c.
No. 24, f.o.b. Birmingham	2.55c.
No. 24, c.i.f. Pacific Coast ports	2.88c.
Heavy Cold-Rolled	
No. 10 gage, f.o.b. Pittsburgh	2.35c.
No. 10 gage, f.o.b. Chicago mills	2.45c.
No. 10 gage, del'd Philadelphia	2.64c.
No. 10 gage, f.o.b. Birmingham	2.50c.
Light Cold-Rolled	
No. 20 gage, f.o.b. Pittsburgh	2.95c.
No. 20 gage, f.o.b. Chicago mills	3.05c.
No. 20 gage, del'd Philadelphia	3.24c.
No. 20, f.o.b. Birmingham	3.10c.

(Prices on furniture stock include stretcher leveling but not resquaring.)

<i>Automobile Body Sheets</i>	
No. 20, f.o.b. Pittsburgh.....	3.10c.
<i>Steel Furniture Sheets</i>	
No. 10, f.o.b. Pittsburgh.....	2.75c.
No. 20, f.o.b. Pittsburgh.....	3.35c.

(Prices on furniture stock include stretcher leveling but not resquaring.)

Galvanized Sheets	
No. 24, f.o.b. Pittsburgh.....	2.90c.
No. 24, f.o.b. Chicago mills.....	3.00c.
No. 24, del'd Philadelphia.....	3.19c.
No. 24, f.o.b. Birmingham.....	3.05c.
No. 24, c.i.f. Pacific Coast ports.....	3.38c.

<i>Long Terns</i>	
No. 24, unassorted, 8-lb. coating, f.o.b. P'gh	3.15c.
<i>Vitreous Enameling Stock</i>	
No. 10, f.o.b. Pittsburgh	2.90c.
No. 20, f.o.b. Pittsburgh	3.40c.

(F.o.b. maker's mill)

Alloy Quantity Bar Base, 2.65c. per Lb.

Alloy	Differential
2000 (1 1/2% Nickel)	\$0.25
2100 (1 1/2% Nickel)	0.55
2200 (3 1/2% Nickel)	1.50
2500 (5% Nickel)	2.25
3100 Nickel Chromium	0.55
3200 Nickel Chromium	1.35
3300 Nickel Chromium	3.80
3400 Nickel Chromium	3.20
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum (1.25 to 1.75 Nickel)	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	0.45
5100 Chromium Spring Steel	0.20
6100 Chromium Vanadium Bar	1.20
6100 Chromium Vanadium Spring Steel	0.95
9250 Silicon Manganese Spring Steel (flats)	0.25
Rounds and squares	0.50
Chromium Nickel Vanadium	1.50
Carbon Vanadium	0.95

Above prices are for hot-rolled steel bars, forging quality. The differential for cold-drawn bars is 1/2c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a sectional area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2 1/2 in. thick, regardless of sectional area, take the bar price.

Standard, f.o.b. mill

Light (from billets), f.o.b. mill

Light (from rail steel), f.o.b. mill

Standard, f.o.b. mill

Light (from billets), f.o.b. mill

Light (from rail steel), f.o.b. mill

Standard, f.o.b. mill

Light (from billets), f.o.b. mill

Light (from rail steel), f.o.b. mill

Track Equipment

	Base per 100 Lb.
Spikes, $\frac{3}{4}$ in. and larger	\$2.70
Spikes, $\frac{1}{2}$ in. and larger	2.70
Spikes, boat and barge	2.90
Tie plate, steel	1.95
Angle bars	2.75
Track bolts, to steam railroads	\$3.80 to 4.00
Track bolts, to jobbers, all sizes, per 100 count	73 per cent off list

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Steel	Black	Galv.	Iron	Black	Galv.
Inches			Inches		
1 1/2	47	21 1/2	1 1/2	11	+36
1 3/4	53	27 1/2	1 3/4	23	5
2	58	44 1/2	2	28	11
2 1/2	62	50 1/2	2 1/2	31	15
3	64	52 1/2	3	35	18

Lap Weld

Steel	Black	Galv.	Iron	Black	Galv.
Inches			Inches		
2	57	45 1/2	2	23	9
2 1/2	61	49 1/2	2 1/2	28	13
3	64	52 1/2	3	30	17
3 1/2	66	54 1/2	3 1/2	29	16
4	68	56 1/2	4	26	11

Butt Weld, extra strong, plain ends

Steel	Black	Galv.	Iron	Black	Galv.
Inches			Inches		
1 1/2	43	26 1/2	1 1/2	13	+48
1 3/4	49	32 1/2	1 3/4	23	7
2	55	44 1/2	2	28	12
2 1/2	60	49 1/2	2 1/2	34	18
3	62	51 1/2	3	34	18
3 1/2	63	52 1/2	3 1/2	34	18

Lap Weld, extra strong, plain ends

Steel	Black	Galv.	Iron	Black	Galv.
Inches			Inches		
2	55	44 1/2	2	29	13
2 1/2	59	48 1/2	2 1/2	34	20
3	61	50 1/2	3	33	19
3 1/2	64	53 1/2	3 1/2	31	17
4	67	56 1/2	4	21	8

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discounts of 5 and 2 1/2%, and on galvanized by 1 1/2 points with supplementary discounts of 5 and 2 1/2%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2 1/2%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh	
Steel	Charcoal Iron
2 in. and 2½ in.	38
2½ in.—2¾ in.	46
3 in.	52
3½ in.—3¾ in.	54
4 in.	57
4½ in. to 6 in.	46
	1½ in. 1
	1¾ in. 8
	2 in.—2¼ in. 13
	2 in.—2½ in. 13
	3 in. 17
	3½ in. to 3¾ in. 18
	4 in. 20
	4½ in. 21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

Standard Commercial Seamless Boiler Tubes

Cold Drawn			
1 in.	61	3 in.	46
1¼ to 1½ in.	53	3¼ to 3½ in.	48
1¾ in.	37	4 in.	51
2 to 2¼ in.	32	4½, 5 and 6 in.	40
2½ to 2¾ in.	40		

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points, with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gages take the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon, 0.10% to 0.30% base (carloads) ... 55

Carbon, 0.30% to 0.40% base ... 50

Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

Per Cent Off List

Carbon, 0.10% to 0.30% base (carloads) ... 55

Carbon, 0.30% to 0.40% base ... 50

Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

The Iron Age, October 8, 1931—975

▲▲▲ Non-Ferrous Metal Markets ▲▲▲

Second Quarter Copper Sold—Lead and Zinc Decline—Tin Quiet

NEW YORK, Oct. 6.

COPPER

Sales of electrolytic copper are continuing at 7c. a lb., delivered Connecticut Valley, by custom smelters, but primary producers are virtually out of the market, selling only occasionally to regular customers at a minimum of 7.25c., delivered. Domestic buying has been moderately active in the past week, and the forward buying movement has continued, so that a substantial tonnage is under contract for delivery in the first quarter of next year, and certain small sales have been made in the past few days for shipment in the second quarter.

Producers are discussing the advisability of seeking a tariff on copper as a means of curtailing imports. It is pointed out that Canada imposes a duty of 1½c. a lb. and a tariff of 4c. a lb. or more has been suggested for this country, or a possible flexible provision, making the tariff effective until the copper price here is at 15c. a lb. American and foreign copper producers will meet in New York at the end of this month to confer on means of curtailing the present large world production. Lake copper is quiet and the price unchanged at 7.37½c. a lb., delivered.

The price of Copper Exporters, Inc., is unchanged at 7.50c. a lb., c.i.f. usual European ports, and foreign buying has been small so far this month, totaling 2150 tons to Oct. 5.

COPPER AVERAGES

The average price of Lake copper based on daily quotations in THE IRON AGE is 7.58½c. a lb. for September, delivered New York. The average price of electrolytic copper is 6.97c., refinery, or 7.22c., delivered in the Connecticut Valley.

TIN

Buying by domestic consumers has been decidedly small in the past week, although the price here has been steady with the maximum fluctuation only ¼c. a lb. during the week. The London price, however, has continued irregular in sympathy with the movement of the pound sterling in international exchange and American buyers are not inclined to cover until there is more stability abroad. The London quotation today is £124 10s. for spot standard, £128 12s. 6d. for future standard, £128 10s. for spot Straits and £133 17s. 6d. in Singapore. Stocks of tin in United King-

THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY

	Oct. 6	Oct. 5	Oct. 3	Oct. 2	Oct. 1	Sept. 30
Lake copper, New York.....	7.37½	7.37½	7.37½	7.37½	7.37½	7.37½
Electrolytic copper, N. Y.*.....	6.75	6.75	6.75	6.75	6.75	6.75
Straits tin, spot, N. Y.*.....	22.25	22.12½	22.00	22.00	22.00	22.00
Zinc, East St. Louis.....	3.57½	3.57½	3.60	3.60	3.60	3.60
Zinc, New York.....	3.92½	3.92½	3.95	3.95	3.95	3.95
Lead, St. Louis.....	3.82½	3.82½	4.07½	4.07½	4.22½	4.22½
Lead, New York.....	4.00	4.00	4.25	4.25	4.40	4.40

*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

Aluminum, 98 to 99 per cent pure, 22.90c. a lb., delivered.
Nickel electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.
Antimony, 6.55c. to 6.60c. a lb., New York.

dom warehouses have declined 237 tons to 30,139 tons, 75 tons having been shipped to the United States in the week. Total shipments from Singapore to Oct. 3 are 1193 tons.

Statistics for September show the visible supply of tin to have decreased 265 tons, but the carryover in the Straits increased 733 tons. Production in the Straits was 7018 tons and shipments for the month 6285 tons, which compares with the original estimate of about 6000 tons to be shipped. It is estimated that the Straits production in October will be 6000 tons, but shipments are placed at about 7500 tons.

LEAD

From 4.40c., New York, and 4.22½c., St. Louis, the market has declined a total of \$8 a ton in the past week, being reduced 15 points on Friday and 25 points, based on sales yesterday and today. Even at the current level of 4c., New York, and 3.82½c., St. Louis, buyers show but little interest in covering more than immediate requirements. Prior to the decline in the price of virgin

metal, remelted lead was being offered at 15 points under the market, but at the lower level of prices it is not available.

ZINC

Sales of zinc on Oct. 1 brought the level of the market to 3.95c., New York, and 3.60c., East St. Louis, and on Oct. 5, second hands offered at 3.92½c., New York, and 3.57½c., East St. Louis, although primary producers are not meeting this lower price. Consumers are still limiting their buying to immediate requirements, and with but little sold ahead, sellers consider the market statistically sound.

ANTIMONY

The Chinese metal is quoted by importers at 6.55c. to 6.60c., duty paid, New York, for prompt shipment, but in view of the strength in the silver market, quotations for future delivery are irregular, certain sellers offering to sell at 6.40c., duty paid, while others are asking 6.62½c., New York. Current buying is slightly more active than in recent weeks, but orders are still small.

New York, Chicago or Cleveland Warehouse

Delivered Prices, Base per Lb.

High brass.....	15.00c.
*Copper, hot rolled, base sizes, 1000 lb. and more.....	16.12½c.
Seamless Tubes—	
Brass.....	19.75c.
Copper.....	19.62½c.
Brass Rods.....	13.25c.
Braced Brass Tubes.....	23.75c.

*Extra for cold-rolled, 3c. per lb.

New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks.....	9.25c. to 9.50c.
Zinc sheets, open.....	10.25c. to 10.50c.

Metals from New York Warehouse

Delivered Prices, per Lb.

Tin, Straits pig.....	25.00c. to 26.00c.
Tin, bar.....	27.00c. to 29.00c.
Copper, Lake.....	9.00c. to 10.00c.
Copper, electrolytic.....	8.50c. to 9.00c.
Copper, casting.....	8.25c. to 8.75c.
Zinc, slab.....	5.00c. to 5.50c.
Lead, American pig.....	5.00c. to 6.00c.
Lead, bar.....	6.75c. to 7.75c.
Antimony, Asiatic.....	9.00c. to 10.00c.
Aluminum No. 1 ingots for remelting (guaranteed over 99% pure).....	20.00c. to 23.00c.
Alum. ingots, No. 12 alloy.....	19.00c. to 21.00c.
Babbitt metal, commercial grade.....	19.00c. to 29.00c.
Solder, ½ and ⅓.....	16.50c. to 17.50c.

Metals from Cleveland Warehouse

Delivered Prices, per Lb.

Tin, Straits pig.....	26.50c.
Tin, bar.....	28.50c.
Copper, Lake.....	8.37½c.
Copper, electrolytic.....	8.37½c.
Copper, casting.....	8.00c.
Zinc, slab.....	5.00c.
Lead, American pig.....	5.00c.
Lead, bar.....	7.75c.
Antimony, Asiatic.....	10.00c.
Babbitt metal, medium grade.....	15.00c.
Babbitt metal, high grade.....	30.50c.
Solder, ½ and ⅓.....	19.00c.

Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged consumers after the metal has been properly prepared for their uses. (All prices are nominal because of uncertain condition of market.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	5.25c.	6.00c.
Copper, hvy. and wire	5.00c.	5.75c.
Copper, light and bottoms.....	4.25c.	5.00c.
Brass, heavy.....	2.75c.	3.50c.
Brass, light.....	2.25c.	3.00c.
Hvy. machine composition.....	4.00c.	4.75c.
No. 1 yel. brass turnings.....	3.25c.	3.75c.
No. 1 red brass or compos. turnings.....	3.75c.	4.50c.
Lead, heavy.....	2.75c.	3.25c.
Zinc.....	1.50c.	2.00c.
Sheet aluminum.....	9.50c.	11.50c.
Cast aluminum.....	3.50c.	5.50c.

FABRICATED STRUCTURAL STEEL

New Projects of 26,500 Tons Include 10,000-Ton Bridge—Bookings
Total 24,500 Tons

NEW fabricated structural steel work totals 26,500 tons, more than half in three projects, a railroad bridge crossing between Albany and Rensselaer, N. Y., 10,000 tons, a United States Archives building in Washington, 5000 tons, and a post office and court house at Miami, Fla., 2000 tons.

Awards covered 24,500 tons, compared with 126,000 tons a week ago, when the New Orleans Bridge and a terminal warehouse in New York contributed 84,000 tons of the total. This week's lettings include 8000 tons in a dirigible dock for the United States Navy at Sunnyvale, Cal., 2000 tons for shops at Randolph Air Field, San Antonio, Tex., and 1900 tons for subway construction in Newark, N. J. Awards follow:

North Atlantic States

HARTFORD, CONN., 1400 tons, Post Office and Court House, to Palmer Steel Co.
NEWINGTON, CONN., unstated tonnage, Veterans' Hospital, to Porcupine Co.

WILLIMANTIC, CONN., 300 tons, hospital, to Bethlehem Fabricators, Inc.

GREENFIELD, MASS., 300 tons, Court House, to Haarmann Steel Co.

WHITMAN, MASS., 230 tons, manufacturing plant, to American Bridge Co.

ENBRIDGE, MASS., 130 tons, State bridge, to Boston Bridge Works, Inc.

PITTSBURG, N. H., 200 tons State bridge, to American Bridge Co.

STATE OF CONNECTICUT, 150 tons, highway bridge, to McClintic-Marshall Corp.

PINE AIR, N. Y., 850 tons, group of 18 buildings for Pilgrim State Hospital, to American Bridge Co.

PENNSYLVANIA RAILROAD, 200 tons, communication duct system, to Belmont Iron Works.

BROOKLYN, 250 tons, decking beams, awarded by Cornell Contracting Co., to American Bridge Co.

NEW YORK, 135 tons, tunnel roof supports, awarded by Patrick McGovern, Inc., to Commercial Shearing & Stamping Co., Youngstown.

STATE OF NEW JERSEY, 1900 tons, subway construction on section 1, Newark, awarded by J. Rich Steers, New York, to McClintic-Marshall Corp.

STATE OF NEW JERSEY, 220 tons, bridges on route 2, section 6, to American Bridge Co.

KEARNY, N. J., 280 tons, turbine foundations for United Engineers & Constructors, to Shoemaker Bridge Co.

CAMDEN, N. J., 600 tons, Camden County Court House, to Lehigh Structural Steel Co.

POTTSVILLE, PA., 400 tons, high school, to Progressive Iron Works.

LATROBE, PA., 270 tons, bridge, to McClintic-Marshall Corp.

LEGONIER, PA., 260 tons, bridge for Westmoreland County, to McClintic-Marshall Corp.

ERIE, PA., 300 tons, Hamot Hospital, to Erie Steel Construction Co.

South and Southwest

BROWNSVILLE, TEX., 395 tons, Post Office, to Houston Structural Steel Co.

SAN ANTONIO, TEX., 2000 tons, shops at Randolph Air Field for Government, to Ingalls Iron Works.

EL PASO, TEX., 108 tons, addition to Federal prison, to Ingalls Iron Works.

AMARILLO, TEX., 240 tons, theater and office building, to Mosher Steel & Machinery Co.

CUSTER COUNTY, OKLA., 1500 tons, bridge, to an unnamed bidder.

Central States

CLEVELAND, 225 tons, Portland-Outhwaite Recreation Center, to Berger Iron Works.

SPRINGFIELD, ILL., 1000 tons, bridge, to Clinton Bridge Co.

CHICAGO, 250 tons, American Airways hangar, to an unnamed bidder.

CEDAR RAPIDS, IOWA, 330 tons, Post Office, to Iowa Bridge Co.

NEOLA, IOWA, 135 tons, bridge for Milwaukee Road, to Wisconsin Bridge Co.

ST. LOUIS, 497 tons, 10 deck plate girder spans for Missouri Pacific Railroad, to Stupp Brothers Bridge & Iron Co.

FORT LEAVENWORTH, KAN., 210 tons, airplane hangar, to Belmont Iron Works.

WICHITA, KAN., 100 tons, viaduct, to Ben Sibitt Iron Foundry.

Western States

ROBERTS, IDAHO, 200 tons, bridge, to Minneapolis-Moline Power Implement Co.

ST. LOUIS-SAN FRANCISCO RAILROAD, 230 tons, bridge, to Virginia Bridge & Iron Co.

OAKLAND, CAL., 350 tons, municipal exposition building, to Herrick Iron Works.

SUNNYVALE, CAL., 8000 tons, Navy dirigible dock, to Wallace Bridge & Structural Steel Co.

SAN FRANCISCO, 450 tons, pier 23 shed, to Herrick Iron Works.

STRUCTURAL PROJECTS PENDING

Inquiries for fabricated steel work include the following:

North Atlantic States

FRAMINGHAM-NATICK, MASS., 420 tons, State bridges.

EAST BOSTON, 225 tons, air corps unit.

GLOUCESTER, MASS., 130 tons, theater.

WATERBURY, CONN., 350 tons, Post Office; bids to be opened Oct. 26 by Supervising Architect, Treasury Department, Washington.

MANCHESTER, N. H., 250 tons, Post Office, remodeling and extension; bids to be opened Oct. 28 by Supervising Architect, Treasury Department.

LONG ISLAND RAILROAD, 300 tons, bridge, at Floral Park, N. Y.

HUDSON FALLS, N. Y., 200 tons, State highway bridge.

WATERTOWN, N. Y., 200 tons, Medical Arts building.

NEW YORK, 550 tons, Community Church at Park Avenue and Thirty-fifth Street, Geckie-Norton, Inc., general contractor.

BROOKLYN, 650 tons, building on Church Avenue, for Y. M. C. A.

NEW ROCHELLE, N. Y., 250 tons, Naval Militia armory, bids open Oct. 14.

PEEKSKILL, N. Y., 650 tons, armory for National Guard, bids open Oct. 14.

STATE OF NEW YORK, 10,000 tons, superstructure of Albany-Rensselaer railroad bridge crossing elimination.

STATE OF NEW YORK, 500 tons, substructure of Troy-Menans bridge.

LAKELAND, N. J., 600 tons, hospital for Board of Freeholders, Camden, low bidders Belmont Iron Works, Philadelphia, with Jersey Steel Co., Trenton, N. J., low on alternate bid.

WASHINGTON, 100 tons, addition to Hine Junior High School.

WASHINGTON, 790 tons, Senate Office Building wing, general contractor, George A. Fuller Co.

WASHINGTON, 5000 tons, United States Archives building.

PHILADELPHIA, 156 tons, bridge at Summerdale Avenue, George F. Dobbin, Philadelphia, low for general contract.

PHILADELPHIA, unstated tonnage, sales and office building for Whitegood Realty Co., at 5 South Thirty-sixth Street.

WESTERN MARYLAND RAILROAD, 200 tons, bridge.

South and Southwest

MIAMI, FLA., 2000 tons, Post Office and Court House, Ralph Solitt & Sons Construction Co., Chicago, contractor.

WICHITA FALLS, TEX., 725 tons, Post Office, H. W. Underhill Construction Co., Dallas, Tex., contractor.

GREENSBORO, N. C., 900 tons, Post Office, bids to be opened Oct. 29 by Supervising Architect, Treasury Department, Washington.

EL RENO, OKLA., 500 tons, reformatory, bids to be opened Nov. 5 by Supervising Architect, Treasury Department.

Central States

CLEVELAND, 900 tons, sewage disposal plant.

MELROSE PARK, ILL., 450 tons, Indiana Harbor Belt Railway.

CHICAGO, 2000 tons, Rembrandt School; Vanderkloot Steel Works low bidder.

CHICAGO, 2000 tons, Galileo School; Gage Structural Steel Co. low bidder.

MADISON, WIS., 550 tons, State highway bridges; bids close Oct. 8.

LINDENWOOD, MO., 109 tons, bridge for St. Louis-San Francisco Railway.

Western States

SAN FRANCISCO, 400 tons, building, for Owens-Illinois Glass Co., Toledo.

NEEDLES, CAL., 100 tons, shops for Santa Fe Railroad.

MARTINEZ, CAL., 300 tons, County Hall of Records.

SUTTER COUNTY, CAL., 187 tons, Tisdale weir sheet piling.

FABRICATED PLATES

Awards

PITTSBURGH, 600 tons, six barges for Pittsburgh Gravel Corp., to Jones & Laughlin Steel Corp.

Pending Projects

BARBERTON, OHIO, 275 tons, municipal water tank.

Reinforcing Steel

Awards Higher—Pending Projects in Lighter Volume

IETTINGS of reinforcing steel the past week called for 5100 tons, compared with 3100 tons in the previous week. The Sanitary District in Chicago will use 3500 tons, which was the largest booking. New projects, at 2250 tons, compare with 8450 tons in the preceding week. No inquiries for more than 500 tons are reported. Awards follow:

PROVIDENCE, R. I., 425 tons, State pier, to Kalman Steel Co.

NEW YORK, 250 tons, sewer in West Side improvement between Thirty-ninth and Forty-ninth Streets, to National Bridge Co.

COLUMBUS, OHIO, 190 tons, Olentanzyscioto sewer, to Kalman Steel Co.

PEORIA, ILL., 200 tons, high school, to Kalman Steel Co.

CHICAGO, 200 tons, Firestone Tire & Rubber Co., to Inland Steel Co.

CHICAGO, 3500 tons, Sanitary District works, to an unnamed bidder; steel to be furnished by Inland Steel Co.

SACRAMENTO, CAL., 100 tons, California Fruit Exchange office building, to Truscon Steel Co.

ALAMEDA COUNTY, CAL., 100 tons, drainage culverts, to Pacific Coast Steel Co.

SAN FRANCISCO, 100 tons, Health Center building, to Concrete Engineering Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

EDGEWATER, N. J., 250 tons, factory and warehouse for Lever Brothers.

STATE OF NEW JERSEY, 207 tons, bridge over Lehigh Valley Railroad at Hillside, N. J.

SHELTON, CONN., unstated tonnage, Laurel Heights sanatorium; originally structural steel but redesigned for reinforced concrete.

FORT JAY, N. Y., 355 tons, hospital; J. R. and J. A. Whelan, Inc., Taunton, Mass., low for general contract.

NEW YORK, 200 tons, piers for Tri-Borough bridge; Rogers & Haggerty, Inc., Brooklyn, low for general contract.

OAK PARK, ILL., 450 tons, Post Office.

CHICAGO, 500 tons, power house to serve Union Station and Post Office.

CHICAGO, 150 tons, Dvorak Junior High School; D. E. Anderson, general contractor.

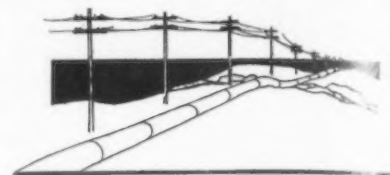
CHICAGO, 150 tons, Galileo Junior High School; bids opened.

CHICAGO, 150 tons, Rembrandt Junior High School; bids opened.

MADISON, WIS., 425 tons, State highway bridges; bids close Oct. 8.

LOS ANGELES, 100 tons, Compton Fox Theater.

PASADENA, CAL., 100 tons, Post newspaper building.



PIPE LINES

United Fuel Gas Co., Charleston, W. Va., is considering installation of a pipe line from connection with main system near Allegany Station, Va., to White Sulphur Springs, W. Va., and vicinity, for natural gas.

Northern Natural Gas System, Mason City, Iowa, has work under way on a 16-in. pipe line from point near Mason City to Albert Lea, Minn., and vicinity, for which contract recently was let to Truman-Smith Co., Wichita, Kan. Company has secured right-of-way to Owatonna, Minn., and line will ultimately extend to that point.

Prairie Pipe Line Co., Independence, Kan., is considering construction of an oil pipe line from its main trunk system to Fort Worth, Tex.

Globe Oil & Refining Co., Blackwell, Okla., contemplates construction of a pipe line from refinery at Blackwell to Ritz-Canton oilfield in Kansas, about 140 miles.

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Railroad Equipment

Texas Co. is inquiring for 48 gondola cars of 50-ton capacity.

St. Louis-San Francisco is in the market for five freight car underframes.

Pacific Fruit Express has ordered 520 sets of steel side and end frames for maintenance work, of which 250 sets were ordered from Consolidated Steel Corp., Los Angeles.

United States Navy opened bids Sept. 29 on three flat cars, on which General American Tank Car Corp. and Haffner-Thrall Co. were low bidders.

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Independent Pneumatic Tool Co., Chicago, has moved its Birmingham office from the Comer Building to 915 North Seventh Avenue, where warehouse facilities will permit the carrying of a complete line of pneumatic and electric tools. H. F. Halbert is manager.

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Rockford Screw Products Co., Rockford, Ill., has been licensed by the Dardet Threadlock Corp., 120 Broadway, New York, to manufacture and sell bolts, nuts and screws threaded with the Dardet self-locking thread.

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Production of range boilers in August declined to 32,003 units from 44,611 in July, and orders decreased to 35,674 from 39,066, according to reports received by the Bureau of the Census from 17 manufacturers.

Iron Ore Imports Drop Sharply

Imports of iron ore into the United States in August are reported by the Department of Commerce at 91,908 gross tons. Except for last November, this is the smallest month's total since November, 1923. The drop from the 128,106 tons of July was 28½ per cent, and from the August, 1930, total of 178,171 tons, 48 per cent.

Russia took first place in August, leaving Chile, which long has sent in about half of the total, a close second. Sweden, Cuba and French Africa followed in that order.

For eight months the aggregate incoming movement, 1,112,590 tons, shows a drop of 48 per cent from last

year. It was the lowest total, for the first eight months, since that of 1922.

Chile continued to hold the lead in the eight-month period, with 51½ per cent of the total. Russia, with 19 per cent, was second, outstripping French Africa, Cuba, Sweden and Spain, in second to fifth places last year.

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Quantity differentials have been adopted by New York warehouses on hot-rolled copper sheets. The current delivered quotation of 16.12½c. a lb. will apply on lots of 1000 lb. and more. On less amounts, extras ranging from ¼c. to 12c. a lb., depending upon the quantity, will be applied. All extras are subject to 25 per cent discount.

Sources of American Imports of Iron Ore

(In Gross Tons)

	August		Eight Months Ended August	
	1931	1930	1931	1930
Chile	21,652	105,765	572,061	1,259,730
Cuba	11,000	.....	67,000	190,654
Spain .....	.....	4,500	37,887	53,063
Sweden	14,261	17,266	58,022	159,172
French Africa	6,650	31,550	65,172	196,975
Canada	380	120	584	356
Russia	22,200	.....	212,859	6,771
Other countries	15,765	18,970	99,005	256,595
Total	91,908	178,171	1,112,590	2,123,316

British Steel Industry May Be Reorganized for Mass Production

(By Cable)

LONDON, ENGLAND, Oct. 5.

BELIEF is strong here that all foreign balances will be withdrawn from the United States, with British liquidation of dollar securities proceeding under pressure of the crisis.

Industrial and financial circles consider that the financial conference between Great Britain and France was called at the instance of the French because they are disturbed by the consequences of their policy. The political situation here is unsatisfactory and a general election appears probable before the end of October.

In a paper before the economic section of the British Association, Professor H. Stanley Jevons urges a revolutionary change in the British steel industry as the only solution to present difficulties.

Conditions appear to warrant a safeguarding duty, he said, at least for a term of years, provided assurance is given that domestic prices will not be advanced, plants will be worked to capacity, and large scale reorganization undertaken.

It is reasonable to expect a considerably improved demand for heavy products in the next twenty years, he pointed out, particularly in railroad materials, and structural steel for the colonies and tropics. Most of this could be supplied from Britain. The objective of the country should be to advance the annual steel production

British annual steel output of 25,000,000 tons with 10,000,000 tons for export proposed.

* * *

American tin plate users inquire in England as Welsh-American agreement terminates.

* * *

Italian steel industry may form export cartel to compete with Belgium, Germany and Luxemburg.

* * *

Soviet Union plans 150,000-ton copper smelter in Kakasastan district.

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to 25,000,000 tons, allowing 10,000,000 tons for export.

New plants, said Professor Jevons, should be constructed for mass production of shapes at a cost of £150,000,000, this new capital to be provided through State credits, by public boards raising the money and leasing the completed plants.

The Welsh-American tin plate agreement, which allocates exports to certain markets, terminated Sept. 30, the three years it was to be in effect having expired.

Under present financial conditions it is said to be impossible to arrange a renewal of the agreement. In con-

sequence, all markets for tin plate are now free and United States users of oil can tin plate and South American consumers are inquiring for Welsh material.

Welsh mills are quoting on some substantial tin plate inquiries and the Ffrwdwyllt Tin Plate Co., Port Talbot, has resumed operation.

The Continental Raw Steel Cartel is considering abandoning the pound sterling as a basis for invoices, but has not yet determined on the use of another unit.

German steel works are considering adoption of the dollar as an accounting medium. Polish industrialists are apprehensive that depreciation in the pound sterling will favor suspension of the gold standard there.

The Berlin Chamber of Commerce has recommended that its members reach an amicable understanding on existent contracts based on the pound sterling prior to depreciation.

The German Union of Wholesale and Overseas Trades states that there is no legal right or moral claim, either for alteration of currency values in agreements, or for payment on a gold basis, unless clauses to that effect were included in the agreements between the parties concerned.

British iron and steel business is improving slowly and blast furnaces are securing more orders with small stocks on hand. Domestic railroads and the municipalities are continuing

British and Continental European Export Prices f.o.b. United Kingdom Ports, Hamburg and Antwerp

British Prices, f.o.b. United Kingdom Ports

Per Gross Ton, £ at \$3.85

Pig iron, export, £9 0s.			\$34.65
Billets, open-hearth	5 2½	to 15 12½s.	19.73 to \$21.65
Black sheets, Japanese specifications	9 10	to 9 15	36.58 to 37.53
Tin plate, per base box (nom.)	0 14½	to 0 15½	2.69 to 2.97
Steel bars, open-hearth	7 17½	to 8 7½	1.35 to 1.44
Beams, open-hearth	7 7½	to 7 17½	1.26 to 1.35
Channels, open-hearth	7 12½	to 8 2½	1.31 to 1.40
Angles, open-hearth	7 7½	to 7 17½	1.26 to 1.35
Black sheets, No. 24 gage	8 5	to 8 10	1.42 to 1.46
Galvanized sheets, No. 24 gage	9 15		1.68

Continental Prices, f.o.b. Antwerp or Hamburg

Per Metric Ton, Franc at 3.95c.

Foundry iron, 2.50 to 3.00 per cent sil., 1.00 per cent and more phosphorus	286 fr. to	289 fr.	\$11.30 to \$11.42
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Billets, Thomas	344 fr. to	350 fr.	\$13.61 to \$13.85
Wire rods, low C., No. 5 B.W.G.	585	to 615	23.09 to 24.30
Rails, light	740		29.20
Black sheets, No. 31 gage, Japanese	1384	to 1476	54.68 to 58.32
			Cents a Lb.
Steel bars, merchant	381	to 383	0.69 to 0.70
Beams, Thomas, British standard (nominal)	381	to 387	0.69 to 0.70
Channels, Thomas, American sections	689	to 701	1.24 to 1.26
Angles, Thomas, 4-in. and larger, over ¾-in. thick	378	to 384	0.68 to 0.69
Angles, Thomas, 3-in.	387	to 393	0.69 to 0.70
Hoops and strip steel over 6-in. base	492	to 510	0.90 to 0.92
Wire, plain, No. 8 gage	615	to 624	1.09 to 1.10
Wire, barbed, 4-pt. No. 12 B.W.G.	1045		1.87

their economy programs, however, and shipbuilding is still quiet.

Clyde bookings in September consisted of only one paddle steamer. Launchings in September were two vessels of 600 tons, the smallest recorded month.

Steel mills are receiving some export inquiries, but so far but little business has developed. Guest, Keen & Baldwin's have resumed operation of the Dowlais mills. Business with the Continent is difficult, most foreign mills maintaining existent contracts on the former gold basis.

A meeting of the International Rail Makers' Association will be held in London soon, and French rail mills are expected to urge a reduction in rail prices.

Welsh makers of sheet bars are heavily booked with business taken in recent weeks and have advanced their prices 7s. 6d. (\$1.44) a ton to £5 (\$19.25) a ton delivered.

Japanese demand for black sheets has improved and some fair business has been done. Galvanized sheet prices are firm, based on increased costs of production.

Contracts for bridge construction in Sierra Leone and Bermuda have been booked by the Cleveland Bridge & Engineering Co., Darlington.

Belgian production in August was 299,000 tons of pig iron, 284,000 tons of raw steel, and 202,000 tons of rolled products.

British Economy Delays Railroad Electrification

WASHINGTON, Oct. 6.—Economy measures have temporarily postponed the extensive electrification project for the four major railroad systems in the United Kingdom, says a report to the Department of Commerce from London. The total cost has been estimated at \$1,650,000,000 to be expended over 10 years. The plan was expected to provide work for a large part of the nation's unemployed, and the Government was to participate through subsidies and in coordination of the work. With need for strict economies in national expenditure, however, the Government has postponed this development.

Japanese to Roll Five Piling Sizes

YOKOHAMA, JAPAN, Sept. 2.—The new sheet piling developed by the Seitetsu Jo (Government Steel Works) is being offered commercially in one size, and additional rolls will eventually provide five sizes. By the end of this year, the company plans to be in a position to furnish piling 3 mm. thick, 400 mm. wide in the web and 125 mm. in height, 22 mm. x 400 mm. x 175 mm. and 15.5 mm. x 400 mm. x 155 mm.

Subsidy for Shipyards Proposed by British

WASHINGTON, Oct. 5.—A method of subsidy has been proposed by the National Steel Makers' Association to aid the British shipbuilding industry, says a report to the Department of Commerce from London. The British Shipbuilding Employers' Federation recently urged a reduction in prices of ship material to aid them in competing with foreign builders. While the producers stated that a special price to shipyards would be unfair to other consumers, the suggestion has now been made that the steel makers raise a levy of £50,000 (\$197,500) over the next six months, which would be turned over to the shipbuilders to assist in completing orders in competition with foreign builders.

Continental Aluminum Prices Lower

HAMBURG, GERMANY, Sept. 23.—The Continental Aluminum Cartel probably will be renewed, but meanwhile members are freely granting concessions from the cartel ingot price of 18.75c. a lb., sales having been made at 16.55c. to 17c. a lb. Following renewal of the cartel, it is believed the official base price may be reduced to 15.45c. a lb. for domestic sales, and certain members are urging an export price of about 14.55c. a lb. Weakness in the price of aluminum has been caused by competition from low-priced copper and also from rustless steel. European stocks of aluminum now represent six to seven months' output, and certain members are urging drastic curtailment of production for eight or nine months.

Soviet to Build Large Copper Smelter

HAMBURG, GERMANY, Sept. 23.—The Soviet Union is negotiating in Germany for the construction of a copper smelting plant of about 150,000 tons annual capacity. The plant is to be built in the Kakasastan district and is expected to cost about \$8,000,000.

Krupp Heat-Resistant Alloy Widely Used

ESSEN, GERMANY, Sept. 23.—Increased use is being made in Germany of the recently developed high heat-resistant alloy steels made by the Friedrich Krupp A. G., and known as NCT 3. The new alloys are being widely used in annealing furnaces and are stated by the maker to be resistant up to 1200 deg. C. (2192 deg. F.).

with only insignificant changes in the physical and mechanical properties at the highest temperatures. The alloys are furnished in 12 different grades for various requirements and are made in sheets, bars and castings.

Soviet Orders an Aid to German Machine Builders

BERLIN, GERMANY, Sept. 21.—Contracts for machinery placed by the Soviet Union with German builders in the first eight months of this year totaled 405,000,000m. (\$95,580,000) and were of considerable importance in maintaining plant operations. The German Federation of Machinery Manufacturers reports operation of the industry last week at 42.1 per cent, compared with an average of 42.8 per cent in August. Domestic orders have been small for some months and export trade is reported declining.

Japanese Aluminum Plant Undersells Importers

YOKOHAMA, JAPAN, Sept. 2.—Aluminum ingots, slabs and sheets are being made from scrap by the recently established First Aluminum Industrial Co. of Kyoto. The company is quoting its remelted aluminum ingots at 800 yen a ton (17.90c. a lb.), which is about 100 yen a ton (2.25c. a lb.) under the cost of the imported product.

Italian Steel Industry May Form Export Cartel

BERLIN, GERMANY, Sept. 21.—Efforts are being made by the Italian steel industry to establish an export cartel, similar to the domestic organization formed last year. It is believed that, with new low costs of production in the industry, united effort through the medium of a cartel will permit successful competition with Belgian, German and Luxemburg sellers, especially in reinforcing bars and heavy plates.

Triumph Electric Corp., Cincinnati, manufacturer of motors, has concluded a license arrangement under its patents with the Burke Electric Co., Erie, Pa., by which high-torque across-the-line motors with welded steel frame construction in N.E.M.A. standard dimensions in all ratings will become available. The arrangement also includes open and fully inclosed fan-cooled types, and the latter will include the Emcol design of ventilation, the patents on which are controlled by the Burke Electric Co.

Lowest Exports in 22½ Years; Imports Were Lower, Also

WASHINGTON, Oct. 2.—Exports of iron and steel products from the United States in August totaled 73,338 gross tons, the lowest movement since January, 1909, when they were 70,085 tons. The previous low mark was in June of the current year, with a total of 75,585 tons.

Imports in August were 30,139 tons, the lowest since February of the present year, with a total of 28,045 tons. The export movement in August showed a decline of 11,128 tons under that of July, while the import drop was 7051 tons.

While in some instances there were increases in both exports and imports, the general trend throughout both classifications was downward. The largest item of exportation was black steel sheets, 10,610 tons, of which 8306 tons went to Canada. Total exports to Canada were 29,865 tons, slightly in excess of 40 per cent of all shipments.

The largest importation in the iron and steel list was structural shapes, 5650 tons, of which 3580 tons came from Belgium, 1328 tons from Germany and 708 tons from France. Of

the 2930 tons of reinforcement bars imported, 2159 tons came from Belgium and 635 tons from France.

Belgium was the chief source of imports, furnishing 9579 tons. Germany ranked second with 7909 tons, and Canada third, with 6430 tons.

Imports of ferromanganese totaled 2295 tons, of which 2116 tons came from Canada and 100 tons from the United Kingdom. Imports of manganese ore totaled 22,052 tons; Russia supplying 8574 tons, Brazil, 5916 tons, and India, 2593 tons.

Exports of Iron and Steel from the United States

(In Gross Ton)

	August		Eight Months Ended August	
	1931	1930	1931	1930
Pig iron	891	765	4,472	10,380
Ferromanganese	68	1,006	1,207	6,065
Scrap	10,424	19,630	100,257	318,162
<i>Pig iron, ferroalloys and scrap</i>	<i>11,383</i>	<i>21,401</i>	<i>105,936</i>	<i>334,607</i>
Ingots, blooms, billets, sheet bar	143	165	2,511	14,712
Skelp	2,503	7,925	44,364	72,791
Wire rods	2,167	3,179	24,263	31,296
<i>Semi-finished steel</i>	<i>4,813</i>	<i>11,269</i>	<i>71,138</i>	<i>118,759</i>
Steel bars	1,984	4,840	28,665	65,806
Alloy steel bars	133	291	2,582	5,216
Iron bars	90	338	805	1,341
Plates, iron and steel	3,000	6,799	35,481	76,308
Sheets, galvanized steel	2,976	5,219	36,595	64,971
Sheets, galvanized iron	218	565	3,489	4,707
Sheets, black steel	10,610	6,537	64,304	81,346
Sheets, black iron	246	910	4,506	7,994
Hoops, bands, strip steel	1,811	2,194	22,353	30,842
Tin plate; terne plate	6,643	20,927	58,827	159,304
Structural shapes, plain material	7,937	10,294	69,111	101,392
Structural material, fabricated	1,963	8,553	25,734	72,256
Tanks, steel	569	3,097	10,249	12,606
Steel rails	2,392	18,298	24,603	81,270
Rail fastenings, switches, frogs, etc.	610	2,409	5,783	14,608
Boiler tubes	534	929	5,185	11,025
Casing and oil-line pipe	1,740	4,157	18,680	49,164
Pipe, black and galvanized, welded steel	4,534	7,743	34,715	60,795
Pipe, black and galvanized, welded iron	330	1,258	3,974	11,876
Plain wire	1,417	1,708	9,864	19,098
Barbed wire and woven wire fencing	2,342	2,127	18,992	28,330
Wire cloth and screening	74	214	1,021	1,223
Wire rope	144	306	1,845	3,320
Wire nails	622	816	5,785	5,476
Other nails and tacks	261	459	2,689	4,281
Horseshoes	2	57	65	134
Bolts, nuts, rivets and washers, except track	401	758	3,711	7,601
<i>Rolled and finished steel</i>	<i>53,583</i>	<i>111,803</i>	<i>499,613</i>	<i>982,290</i>
Cast iron pipe and fittings	1,308	1,856	17,792	23,229
Malleable iron screwed fittings	255	715	3,574	7,635
Car wheels and axles	423	1,047	4,805	10,212
Iron castings	306	417	3,243	5,066
Steel castings	295	845	2,729	7,545
Forgings	416	712	5,577	6,512
<i>Castings and forgings</i>	<i>3,003</i>	<i>5,592</i>	<i>37,720</i>	<i>60,199</i>
All other	556	857	4,939	9,229
Total	73,338	150,922	719,346	1,505,124

Imports of Iron and Steel Products into the United States

(In Gross Ton)

	August		Eight Months Ended August	
	1931	1930	1931	1930
Pig iron	3,122	8,747	65,093	81,056
Sponge iron .....	.....	.....	209	.....
Ferromanganese and spiegeleisen*	2,295	2,236	19,373	43,107
Ferrosilicon† .....	.....	.....	96	162
Other ferroalloys	249	45	598	4,253
Scrap	3,094	1,511	13,213	18,301
<i>Pig iron, ferroalloys and scrap</i>	<i>8,760</i>	<i>12,623</i>	<i>99,821</i>	<i>147,164</i>
Steel ingots, blooms, billets, etc.	903	1,295	13,349	12,745
Wire rods	333	317	4,985	6,680
<i>Semi-finished steel</i>	<i>1,236</i>	<i>1,612</i>	<i>18,334</i>	<i>19,425</i>
Concrete reinforcement bars	2,930	1,747	28,219	.....
Hollow bar and drill steel	175	126	1,150	27,844
Merchant steel bars	4,338	2,704	32,530	.....
Iron bars	11	49	692	898
Iron slabs	6	2	40	.....
Boiler and other plate .....	.....	5	728	1,792
Sheets, skelp and saw plate	630	2,927	13,352	19,930
Tin plate	18	24	113	159
Structural shapes	5,650	4,798	50,377	99,521
Sheet piling .....	.....	517	579	.....
Rails and rail fastenings	172	2,139	4,141	5,054
Welded pipe	887	1,145	5,088	4,293
Other pipe	336	1,489	6,084	11,030
Barbed wire	962	461	5,950	3,327
Round iron and steel wire	150	297	1,955	3,520
Flat wire and strip steel	50	60	448	873
Wire rope and strand	121	145	1,257	1,900
Other wire	31	34	419	249
Hoops and bands	1,946	1,734	13,405	14,333
Nails, tacks and staples	1,305	636	6,399	3,827
Bolts, nuts and rivets	37	12	699	258
Other finished steel	1	21	219	37
<i>Rolled and finished steel</i>	<i>19,756</i>	<i>21,072</i>	<i>173,844</i>	<i>198,845</i>
Cast iron pipe and fittings	149	28	6,115	8,429
Castings and forgings	238	70	1,309	1,147
Total	30,139	35,405	299,423	375,010
Manganese ore*	22,052	7,771	180,574	202,100
Iron ore	91,908	178,171	1,112,590	2,123,316
Magnetite (dead burned)	496	3,563	10,773	28,772

*Manganese content only.

†Chromium content only.

‡Silicon content only.

MACHINERY EXPORTS DROP FURTHER; IMPORTS ARE LOWER

WASHINGTON, Oct. 2.—Making a further decline of \$2,325,000, exports of machinery in August were valued at \$20,354,000, against \$22,679,000 in July, and thus succeeded the latter as the lowest movement since February, 1923, when exports were \$18,816,036.

In the first eight months of the current year exports dropped to \$240,132,000 from \$384,355,000 in the corresponding period of last year.

The loss was 37½ per cent, and the 1931 total was the smallest for the period since 1924. One of the few increases in August was in exports of machine tools, which rose to \$1,825,000 from \$1,664,000 in July. This item was one of the few showing a gain over August, 1930; excavating machinery was another example.

Industrial machinery exports, as classified by the Division of Statistics, declined to \$10,036,000 from \$11,378,000.

Imports of machinery, as listed in THE IRON AGE table, declined to \$937,411 in August from \$1,129,000 in July.

Imports of Machinery into the United States

	(By Value)		Eight Months Ended August	
	August			
	1931	1930	1931	1930
Metal-working machine tools.....	\$44,246	\$25,895	\$182,497	\$716,362
Agricultural machinery and implements.....	138,934	209,205	2,859,145	7,627,967
Electrical machinery and apparatus.....	270,921	341,800	1,784,555	1,709,286
Other power-generating machinery.....	27,541	56,214	216,066	429,520
Other industrial machinery.....	323,863	623,271	3,051,173	6,010,761
Vehicles, except agricultural.....	131,906	203,047	2,011,647	1,863,297
Total	\$937,411	\$1,459,432	\$10,105,083	\$18,357,193

Machinery Exports from the United States

(By Value in Thousands of Dollars)

	August		Eight Months Ended August	
	1931	1930	1931	1930
Locomotives.....	\$46	\$46	\$147	\$584
Other steam engines.....	88	88	428	451
Boilers.....	119	119	287	905
Accessories and parts.....	66	66	274	664
Automobile engines.....	142	142	1,907	5,164
Other internal combustion engines.....	490	490	3,231	6,334
Accessories and parts.....	256	256	1,624	2,509
Electric locomotives.....	22	22	556	491
Other electric machinery and apparatus.....	765	765	3,220	7,176
Excavating machinery.....	363	363	3,162	7,333
Concrete mixers.....	45	45	229	673
Road-making machinery.....	150	150	996	2,723
Elevators and elevator machinery.....	256	256	2,534	3,754
Mining and quarrying machinery.....	1,055	1,055	7,639	10,384
Oil-well machinery.....	1,553	1,553	8,348	18,267
Pumps.....	670	670	3,464	6,561
Bending and power presses.....	278	278	2,379	3,101
Machine tools.....	1,788	1,788	19,111	18,031
Forging machinery.....	127	127	2,637	1,472
Other metal-working machinery and parts.....	491	491	2,669	4,640
Textile machinery.....	691	691	4,541	6,119
Sewing machines.....	446	446	1,631	5,118
Shoe machinery.....	137	137	728	1,182
Flour-mill and grist-mill machinery.....	10	10	195	241
Sugar-mill machinery.....	769	769	749	3,002
Paper and pulp-mill machinery.....	400	400	984	2,345
Sawmill machinery.....	30	30	438	548
Other woodworking machinery.....	154	154	719	1,235
Refrigerating and ice-making machinery.....	229	229	786	2,805
Air compressors.....	338	338	1,924	4,368
Typewriters.....	968	968	2,684	12,047
Power laundry machinery.....	51	51	572	1,041
Typesetting machines.....	283	283	1,828	2,671
Printing presses.....	576	576	1,636	3,679
Agricultural machinery and implements.....	5,872	5,872	53,609	92,261
All other machinery and parts.....	14,364	14,364	102,266	144,479
Total.....	\$20,354	\$34,088	\$240,132	\$384,355

SEVEN MEN PLACE 1000 TONS OF STEEL IN ONE DAY

The Pennsylvania Avenue subway improvement in Philadelphia, where seven erectors of the Phoenix Bridge Co., Phoenixville, Pa., recently placed 1000 tons of steel in one day.



"Dat Ole Debil," Machinery

(Concluded from page 927)

ization at headquarters, did this service department, the signpost of business and industry, advise American business and industry to watch its step prior to the smash of 1929? Did it utter constructive words of warning regarding impending overproduction and world shrinkage of consuming power?

"Or take the Department of Agriculture, the service department of the American farmer. Its cost has increased 718 per cent since 1914, as against a 160 per cent increase in the total value of American farm products. Is the farmer more prosperous today, when this government service costs us \$28 per farm per year, than he was in 1914, when it cost us \$4?"

Machinery Can Be Made to Speak

Yes, machinery needs a voice; not merely to plead its own case at the bar of public opinion, but to take the place and the part it deserves in the councils of the great. It deserves to have something to say about the kind and size of a load that is piled upon its back.

Machinery can be made articulate through organization. Carl A. Johnson, president of the National Machine Tool Builders' Association, has pointed the way to it. Machinery needs the big bass voice that will come through calling together into one big association all of the smaller specialized groups which now represent parts of the big machinery family. For all of the builders of machinery, whether of machine tools, or textile machines, or agricultural implements or construction machinery, or any other sort, have common and pressing causes to get together. And one of the most important of these is to see to it that the machine gets a square deal in the coming days of economic construction.

Riveting or Welding Rustless Steel Structures

(Concluded from page 937)

In this particular type of alloy for this reason—18 and 8, as such a combination, is not entirely a stable alloy, but the author does not intend to dwell upon this point which has been so excellently covered by many authors (Grossman, Bain, Krivobok, T. H. Nelson, et al.) that it seems unnecessary for the purpose of this article to go into more detail than is necessary to cover the welding operation.

In welding 18 and 8, as stated, we are able to produce similar chemical conditions, similar metallurgical conditions, with some variation in phys-

ical condition. It would seem, therefore, that we are more nearly approaching the ideal, assuming, of course, that the weld is good, sound, solid, free from blows and slag inclusions.

(To be concluded)

Close Accuracy Maintained in Making Large 855-Hole Piercing Die

(Concluded from page 943)

on the two slides are set at zero. Any accidental change from true locating of each hole throughout the set-up will show immediately on the dials, and thus is provided a check on each hole bored.

After boring the first hole, the table and work are moved rapidly by means of double threaded screws to the next position, the necessary end measures are inserted, the inside micrometers adjusted and the carriage and table set to 0.0001 in. by means of slow-motion knobs. The carriage and table are then clamped in place, the readings checked on the dials and the second hole bored. The process is then repeated until all holes are finished. It is to be noted that it is unnecessary for the operator to add or subtract measurements. In registering the slightest deviation of the table setting, the indicator dials give a continuous check on the work before, during and after boring each hole.

This rapid checking of each hole as finished will be recognized as a major advantage of the jig boring machine method, the inspecting of the finished work by the usual methods frequently taking almost as much time to do as the entire job itself.

Officials of Timken-Detroit Axle Co., Clark Avenue, Detroit, and Michigan Valve & Foundry Co., 3631 Parkinson Street, have organized joint subsidiary to be known as Timken-Michigan Co., and in which controlling interest will be held by Timken company. New company will operate plant for manufacture of lubricated and non-lubricated valves, leak-clamps, etc., for use on cast iron bell and spigot pipe for oil and gas, taking over certain patents for screw-lift valves heretofore held by Michigan Valve company.

Gardner-Denver Co., Quincy, Ill., has appointed the Interstate Machinery & Supply Co., Omaha, Neb., as its sales agent for Omaha and vicinity.

Industrial Engineers to Convene at Pittsburgh

A comprehensive program has been arranged for the eighteenth national convention of the Society of Industrial Engineers, to be held at the Fort Pitt Hotel, Pittsburgh, Oct. 14, 15 and 16.

A feature of the opening session is an address by R. H. Faulkner, president Auburn Automobile Co., Auburn, Ind., on "The Way Back As We Saw It." The maintenance department—its purpose, responsibilities and operations planning—will be discussed by three speakers at a luncheon meeting on Oct. 14, and simultaneously the sales group meets to consider "The Broader Aspects of Distribution Embracing Advertising and Sales Planning in Relation to Production."

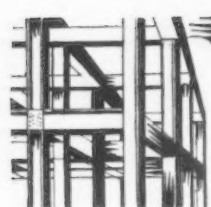
A dinner meeting devoted to "The Technique of Conducting Committee Work in Business Organizations" will precede the evening session. The latter will feature an address on "Status of Industrial Management in Russia Today," by John M. Carmody, editor of *Factory and Industrial Management*, and president of the S.I.E. Charles E. Stuart, president Stuart, James & Cooke, Inc., and Walter N. Polokov, consulting engineer, New York, both of whom have returned recently from consulting work in Russia, will also speak at this session.

Designated as Gilbreth Day, Oct. 15 will include the annual meeting of the Gilbreth International Fatigue Committee, motion studies reflecting the Gilbreth micro-motion technique, and the annual dinner, at which Prof. Joseph W. Roe, New York University, will speak on "Frank Bunker Gilbreth," and Morris L. Cooke, consulting engineer, Philadelphia, will outline "Gilbreth's Contribution to Scientific Management." Dr. Lillian M. Gilbreth will also be a speaker.

"The Need for Cooperation by the Production Engineer and the Time Study Engineer Setting Standards" is the topic for the luncheon meeting, Oct. 16. In the afternoon Harold V. Coes, Ford, Bacon & Davis, New York, and others will discuss "Depreciation a Policy Matter." "What Can Advertising Do for Production" is the title of an address by Gordon Reilly, Powers-House Co., Cleveland, at a dinner meeting; following this there will be a general session on "Tomorrow's Industrial Management," with Percy S. Brown, partner James O. McKinsy & Co., and by W. S. Ford, consulting management engineer, Milwaukee, the principal speakers.

Plants open for inspection during the meeting include that of the Mesta Machine Co., Westinghouse Electric & Mfg. Co., and the Carnegie Steel Co., Homestead works.

Output of Babbitt metal in August was 1,780,900 lb., against 1,931,685 lb. in July, according to reports from the Bureau of the Census from 45 makers.



PLANT EXPANSION AND EQUIPMENT BUYING



Machine Tool Buying Sharply Restricted

MACHINE tool business is sharply restricted in all industrial centers. Signs of improvement a few weeks ago have been followed by a relapse into an exceedingly dull situation. It is apparent that many prospective buyers are now unwilling to make purchases until there shall have been definite improve-

ment in the demand for their products.

The Navy Department has placed orders for 13 lathes for the Brooklyn yard. The original inquiry was for 17, but new bids will be asked for on the larger lathes. This is the largest order in an otherwise uneventful week.

Machine tool builders are watching

Business Exceedingly Dull—Effect on Export Trade of Decline in British Pound Being Closely Watched

closely the new situation created in foreign markets by the decline in the British pound. It is regarded as certain that American exports of metal-working equipment will be adversely affected by this development. However, more time must be allowed for the definite effects to be ascertainable.

NEW YORK

Orders for 13 lathes for the Brooklyn Navy Yard have been placed. These are the smaller lathes in a list of 17 on which bids were taken some time ago. New bids will be asked for on the larger lathes. The Hendey Machine Co. was awarded most of the business that has been placed. It is reported that the New York Board of Transportation has virtually decided on a good many of the machines that are to be purchased for the subway repair shops, but formal orders have not yet been sent out. Aside from these two developments, the local machine tool market is extremely dull.

MILWAUKEE

While occasional orders are received, business is sharply restricted by the hesitancy of intending purchasers to make the investment until there is reasonable hope of improvement in the demand for their products. Consequently, only the most urgent needs are being filled. Metal-working shops in this locality have not yet been able to enlarge production schedules excepting in a small way, although the belief is that supplies of their commodities are shrinking to a point where resumption of output may be imminent.

NEW ENGLAND

A few companies are sounding out the trade relative to buying equipment within the next month or two with a 1932 bill dating. New England machine tool builders report a falling off in automobile and export

buying. Interest now centers largely in possible Government purchases. A few industrial plants are planning to have special equipment built. Among such companies are the Gilbert & Barker Mfg. Co., Springfield, Mass., and the New Departure Mfg. Co., New Britain, Conn., the latter having ordered special equipment for automobile free wheeling units from the New Britain-Gridley Machine Co.

CHICAGO

Although betterment in the machine tool market is indicated here and there, sales curves still show little change and new inquiries are not promising. Where new products are being prepared for the market, machines are purchased and information on new equipment is requested. Shops with established lines appear to require nothing more than replacement parts. The Great Northern is asking for a 5-ton crane, a 600-lb. beamer, a hydraulic press, bolt cutter, pipe machine and a grinder. Other Western railroads are marking time. An automobile equipment company, preparing to market a new device, has ordered a few machine tools, several of which were used machines.

CLEVELAND

The improvement in machine tool business reported a week ago has not been maintained. Sales were light and inquiry scarce the past week. The machinery trade feels that it must depend largely on the motor car industry for business in the next few weeks and it is uncertain how much demand will come from that source. At pres-

ent there is not much business in prospect from any industry and most prospective purchasers are holding off. The Cleveland Planer Co., Cleveland, has received an order from the General Electric Co. for a 48-in. x 16-ft. open-side planer for its Pittsfield plant.

CINCINNATI

There has been little machine tool business the past week except for repair parts. New prospects are negligible. An automotive manufacturer who recently submitted a good-sized list for retooling, has withdrawn and is figuring on a smaller list.

New York

CONTRACT has been let by J. M. Horton Ice Cream Co., 205 East Twenty-fourth Street, New York, to Equity Construction Co., 25 West Forty-third Street, for one-story automobile service, repair and garage building, 200 x 220 ft., to cost about \$100,000 with equipment. J. E. Ross, 25 West Forty-third Street, is architect and engineer.

Visconti, Inc., 385 Fifth Avenue, New York, manufacturer of electric radiators and kindred products, has leased two-story factory at Long Island City, about 50 x 200 ft., for new plant and offices.

Portable Machinery Co., Clifton, N. J., which was recently merged with A. B. Farquhar Co., York, Pa., has moved its equipment to Farquhar plant. Clifton plant will be rented or sold.

Signal Supply Officer, Signal Corps, Army Base, Brooklyn, will receive bids until Oct. 20 for 55,800 ft. cable and two reels, also for quantity of tubes.

A Hack Saw Blade That Gives 10 Times More Production!

HIGHER speed, feed and 10 times more service are features that recommend the new SIMONDS "RED STREAK" High Speed Steel Hack Saws—the production blades with the "RED BACK EDGE."

These blades are economical in operation because they not only increase production, but wherever used for power machine they show a decided reduction in cost per cut.

A trial will convince you that these are the best blades you ever used.

**SIMONDS SAW
and STEEL CO.**

"The Hack Saw Makers"

Established 1832 FITCHBURG, MASS.



SIMONDS
RED STREAK
HIGH SPEED STEEL
HACK SAW BLADES

Hinrichs Foundry & Vault Light Co., Brooklyn, recently organized by Ludwig Hinrichs, 6737 Cooper Avenue, Glendale, L. I., and associates, with capital of \$100,000, plans operation of foundry for production of metal castings. George F. Fanrenholz, 223 Raymond Street, Hasbrouck Heights, N. J., is interested in company.

I. Langner & Son, Inc., 60 East Forty-second Street, New York, contractor, will erect a four-story automobile service, repair and garage building, 65 x 100 ft., to cost over \$125,000 with equipment.

Service Wagon Repair Co., 428 West Nineteenth Street, New York, has purchased five-story building on adjoining site for expansion.

Joseph M. Coffield, 440 Lafayette Street, New York, and associates have organized Packard Oil Burner Corp., with capital of \$500,000, to operate plant for manufacture of oil burners and oil-burning equipment.

Muller Paper Goods Co., 2350 Linden Street, Ridgewood, Brooklyn, operating a paper converting plant, has plans for a three-story addition, including improvements in present factory, to cost close to \$80,000 with equipment. H. Brucker, 2424 Myrtle Avenue, is architect.

Babcock & Wilcox Co., 85 Liberty Street, New York, manufacturer of water-tube boilers and equipment, has taken bids on general contract for four-story and basement addition to plant at Bayonne, N. J., primarily for laboratory and experimental departments.

Port of New York Authority, 80 Eighth Avenue, New York, has awarded general contract to Turner Construction Co., Graybar Building, for 15-story inland freight terminal on block bounded by Eighth and Ninth Avenues, Fifteenth and Sixteenth Streets, at \$7,591,000. Project will include installation of conveying, loading and other mechanical-handling equipment, and will cost close to \$16,000,000 complete.

National Guard Headquarters, Newark Airport, Newark, will begin construction of new one-story hangar, 123 x 160 ft., with repair facilities, for which an appropriation of \$85,000 is available. Contract for superstructure has been let to Perth Amboy Construction Co., Perth Amboy, N. J.

Humphreys Yacht Construction Co., Keyport, N. J., has been organized to take over local plant and assets of Humphreys Shipbuilding Corp., which has been in receivership. New company plans immediate resumption of operations and will carry out improvements for building stock type of Diesel cruisers. Neil B. Wolcott is president and general manager.

Passaic Valley Water Commission, 156 Ellison Street, Paterson, N. J., will receive bids until Oct. 13 for four electrically-operated gate valves for service at Little Falls. Fuller & Everett, 25 West Forty-third Street, New York, are engineers.

Board of Education, 22 Valley Road, Montclair, N. J., plans installation of a vocational training shop in addition to Rand school, to cost about \$90,000, for which bids will be received on general contract on Nov. 10. Starrett & Van Vleck, 393 Seventh Avenue, New York, are architects.

Board of Education, Essex County Vocational Schools, Hall of Records, Newark, is asking bids until Oct. 14 for equipment for electrical department at boys' vocational school, Irvington. Robert O. Beebe is director.

New Jersey Automatic Coal Burner

Corp., Union City, N. J., care of Maurice L. Wenzelberg, 752 New York Avenue, attorney, recently organized by I. V. Lessack, North Bergen, N. J., and associates, plans operation of factory for manufacture of fuel equipment, economizers, etc.

Greenspan Brothers Co., 226 Washington Street, Perth Amboy, N. J., wholesale grocer, has plans for a multi-story storage and distributing plant, with installation of conveying, loading and other equipment, to cost over \$150,000.

Commanding Officer, Picatinny Arsenal, near Dover, N. J., will receive bids until Oct. 12 for drills, wire rope, belting, soil pipe, nipples and other mechanical supplies.

Buffalo

WORK will soon begin by Syracuse Lighting Co., 421 South Warren Street, Syracuse, N. Y., for multi-story equipment storage and distributing plant, with repair divisions, to cost over \$250,000 with equipment.

J. B. Clark Oil Co., Buffalo, J. B. Clark, 1748 Main Street, president, has leased property at Newark, N. J., for factory branch for bottling and distributing lubricating oils, etc. Equipment will be installed at once.

Pletzker-Jentsch, Inc., Buffalo, recently organized by Fred O. Pletzker, 2461 Seneca Street, and associates, with capital of \$20,000, plans operation of factory for manufacture of electrical machinery and parts. Fred P. Jentsch, address noted, will be an official of company.

Board of Education, City Hall, Syracuse, N. Y., plans installation of manual training equipment in new three-story junior high school, to cost over \$700,000, for which bids have been asked on general contract. W. W. Cronin, State Tower Building, is architect and engineer.

Champion Rotary Motor Co., Inc., 1934-68 Elmwood Avenue, Buffalo, specializing in production of two-cycle valveless motor for aircraft, has secured order for 500 motors at cost of about \$200,000, and will develop output on basis of two complete engines weekly. Motors will be used in new junior monoplane to be manufactured by Nicholson Aircraft Corp., Buffalo. Norman P. Augustine is president of Champion company.

New England

STATE Department of Mental Diseases, State House, Boston, has awarded general contract to Central Engineering & Construction Co., 210 Main Street, Pawtucket, R. I., for one-story industrial building at Belchertown, Mass., to cost over \$100,000 with equipment. Kendall Taylor & Co., 209 Columbus Avenue, Boston, are architects. Plans are under way for extensions and improvements in steam power plant at institution at Taunton, Mass., to cost close to \$50,000 with equipment. Charles T. Main, Inc., 201 Devonshire Street, Boston, is engineer.

White Line Bus Corp., 4490 Main Street, Bridgeport, Conn., plans installation of a traveling crane in one-story addition, 80 x 120 ft., for general operating service. Leonard Ashelm, Bridgeport, is architect.

Panco Rubber Co., 31 Highland Avenue, Chelsea, Boston, has plans for a two-story and basement storage and distribut-

ing plant, 75 x 86 ft., to cost about \$45,000 with equipment. Schein & Levine, 222 Washington Street, are architects.

R. D. Symonds, Wethersfield, Conn., and associates have organized Thermo Grate Co., Hartford, Conn., with capital of \$50,000, and will operate plant for manufacture of grates and other heating equipment. E. C. Regan, Hartford, is interested in company.

Lamb Knitting Machine Corp., Chicopee Falls, Mass., has been organized to take over and operate plant of Lamb Knitting Machine Co., manufacturer of knitting machinery and parts. New owner will carry out improvements, including installation of additional equipment. Charles H. Usher, for many years identified with company, will be president.

Bureau of Yards and Docks, Navy Department, Washington, is asking bids until Oct. 21 for steel radio tower for naval station at New London, Conn.

Bolta Rubber Co., Lawrence, Mass., has purchased multi-story mill and will remodel for expansion, more than doubling present capacity. Machinery installation will cost over \$65,000.

School Department, Dedham, Mass., plans installation of manual training equipment in new two-story and basement high school, to cost close to \$275,000, for which bids will be received on general contract until Oct. 14. E. T. P. Graham, 171 Newbury Street, Boston, is architect.

J. H. Baxter & Brothers Canning Co., Brunswick, Me., is planning to rebuild part of canning plant at Westminster, Vt., recently destroyed by fire, with less more than \$80,000 including equipment.

Philadelphia

BIDS have been asked by Philip S. Tyre, 1520 Locust Street, Philadelphia, architect, for three-story automobile service, repair and garage building, to cost close to \$100,000 including equipment.

Commanding Officer, Frankford Arsenal, Philadelphia, will receive bids until Oct. 20 for two 12-station straight-line presses for finishing armor-piercing bullets.

Prison Board, City Hall, Philadelphia, has awarded general contract to L. Lombardi & Brothers, 1515 Wakefield Street, for cell building with mechanical shop, to cost about \$260,000 with equipment. Philip H. Johnson, Architects' Building, is architect.

R. & B. Auto Radiator & Body Co., Inc., Philadelphia, has been organized by Edward Rothberg and associates to take over and expand company of same name with plant at 1429 Fairmont Street, specializing in manufacture of automobile radiators, bodies, fenders and kindred sheet metal goods. Mr. Rothberg will be treasurer. Other officials include Harry Gross and Charles Rothberg.

Bureau of Supplies and Accounts, Navy Department, Philadelphia and Washington, will receive bids until Oct. 13 for one motor-driven electric blower equipment for supplying cooling air to an air-cooled engine undergoing tests; until Oct. 20 for four water brakes.

Goodall Rubber Co., Eighth and Locust Streets, Philadelphia, has leased building to be erected at 5-7 South Thirty-sixth Street, for storage and distribution, to cost over \$60,000 with equipment.

City Council, Philadelphia, is consider-

The first PICKLING TANK LINING



to satisfactorily handle hot, heavy corrosive loads

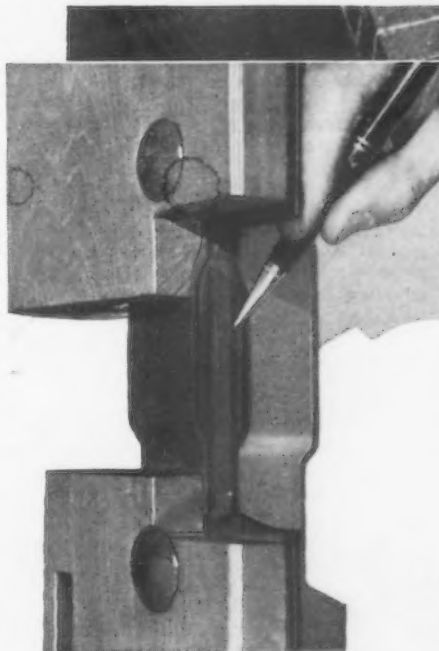
A PICKLING TANK, to be filled with hot acids, and subjected constantly to the impact, the gouging action of heavy falling objects. . . . How line such a tank, at reasonable cost, and economically maintain its efficiency through a long life?

"Impossible," one must have said, until very recently.

Then, after years of research, Goodrich engineers perfected the Triflex Expansion Joint—combined the desirable characteristics of hard rubber with those of soft, to form the first tank lining that satisfactorily handles hot, heavy corrosive loads.

In principle. . . . The Triflex construction is a combination of soft and hard rubber plies. The soft rubber is "locked" into the pores of the steel tank by the Vulcanlock process, another exclusive Goodrich development. The hard rubber plies are so arranged that they do not unite; but rather overlap each other to form expansion joints.

In practice. . . . Hard rubber, when



cushioned by the Triflex construction in layers of soft rubber, takes on new and valuable characteristics.

Subjected to extremes of temperature, it expands and contracts with no danger of cracking or buckling. It successfully resists physical impact, vibration and strain. And

Small pickling tank with brick sheathing partially in place. Pencil points to one of the Triflex Joints, beneath the soft rubber surface of which are concealed alternate layers of hard and soft rubber.

Close-up of Triflex Joint. Pencil points to one of the layers of hard black rubber. Narrow strips of gray are layers of soft rubber. Wider strip of gray (in center) is metal body of tank. Hard rubber layers guard against physical damage. Triflex Joints absorb expansion and contraction.

with brick sheathing providing a temperature drop, a tank lined by the Triflex construction satisfactorily handles acids up to 212 degrees Fahrenheit.

If you must soon construct a new pickling tank or replace an existing one, expert engineering counsel is freely available. Literature, too, is yours for the asking. Address The B. F. Goodrich Rubber Company (Est. 1870), Akron, Ohio.

TRIPLEX EXPANSION JOINT



Another **B. F. Goodrich** *Product*

ing additional fund for development of Hog Island Air-Rail-Marine Terminal for airport facilities, including buildings, shops, etc. Entire project will cost over \$3,000,000. Bureau of Aeronautics, Department of Public Works, City Hall, will be in charge.

Swift & Co., Ninth Street and Girard Avenue, Philadelphia, and Chicago, have plans for a two-story storage and distributing plant, 100 x 200 ft., at Wilkes-Barre, Pa., to cost over \$85,000 with equipment.

Superior Machine & Tool Co., Ephrata, Pa., recently organized by Fred W. E. Grohman and George L. Nies, Ephrata, with capital of \$65,000, plans operation of machine and tool works.

Board of Education, Pottsville, Pa., will install manual training department in new three and four-story and basement high school to cost about \$850,000, for which general contract has been let to I. Reindollar & Son, 936 Linden Street. William B. Ittner, Inc., Continental Life Building, St. Louis, is architect.

Scott Paper Co., Chester, Pa., is carrying out expansion for production of tissue papers, including installation of new high-speed paper-making machine and auxiliary equipment. Work will cost over \$80,000. Stone & Webster Engineering Corp., 90 Broad Street, New York, is engineer.

Board of Education, Muncy, Pa., contemplates installation of manual training equipment in new two-story consolidated high school to cost about \$175,000, for which superstructure will soon begin. Lawrie & Green, Harrisburg, Pa., are architects.

Milwaukee

CERTAIN lines of pumps and electric motors heretofore manufactured in branch plants at Three Rivers, Mich., and Indianapolis, are being moved to main works of Fairbanks, Morse & Co. in Beloit, Wis., to take advantage of its conveyor assembly line mass production facilities and to effect economies by obviating necessity of shipping castings from Beloit branch factories.

Paul Riesen's Sons Co., 2660 North Humboldt Avenue, Milwaukee, is general contractor for first unit of new \$1,000,000 high school in village of Whitefish Bay, suburb of Milwaukee. Initial investment

will be about \$450,000. Herbert W. Tullgren, 1234 North Prospect Avenue, is architect.

Waukesha Motor Co., Waukesha, Wis., has received an order for 1000 gasoline engines valued at \$150,000. Name of purchaser is not divulged. H. L. Horning, president, said that distinct improvement in business first noted about middle of August is well maintained and slight gains are being recorded from week to week.

Plans are being completed for improvements costing \$40,000 in power plant of Michigan State Hospital, Newberry, Mich., including new units, loading dock, automatic stokers, etc. Bids will be taken about Nov. 1. Dr. E. H. Campbell is superintendent.

Chicago

STATE Hospital Board, Springfield, Ill., has plans for an addition to power plant at research and educational hospital at Chicago, to cost about \$50,000 with equipment. Robert C. Ostergren, 155 North Clark Street, Chicago, is associate architect.

Richter Food Products Co., 2910 Armistage Avenue, Chicago, meat packer, has awarded general contract to James Shedden & Co., 208 West Washington Street, for a new two-story plant, to cost about \$450,000 with conveying and other equipment. H. Peter Henschien, 59 East Van Buren Street, is architect and engineer.

City Council, Fairfield, Iowa, is considering installation of a municipal electric light and power plant to cost about \$40,000 with machinery. A special election has been called on Oct. 13 to approve bonds for project. F. W. Goodman is city clerk.

F. S. Gram, city purchasing agent, City Hall, Minneapolis, will soon take bids on general contract for a one-story and basement municipal equipment storage, distributing and repair shop, 66 x 116 ft., with foundations for two additional stories later, to cost about \$45,000 with equipment. N. W. Elsberg, City Hall, is city architect; A. M. Larson, same address, is city engineer.

Northwestern Public Service Co., 402 South Main Street, Aberdeen, S. D., has plans for a new steam-operated electric

generating plant at Webster, S. D., to cost over \$75,000 with Diesel engine units and auxiliary equipment. George F. Fossum, Van Slyke Building, Aberdeen, is architect.

Northwestern Barb Wire Co., Avenue B and Wallace Street, Sterling, Ill., has plans for a steam power house, 100 x 125 ft., to cost close to \$50,000.

H. W. Austin, State commissioner of purchases, State Capitol Building, St. Paul, Minn., is asking bids until Oct. 16 for a 200-kw. engine-generator set, with switchboard and accessory equipment, for State asylum at Willmar, Minn. G. M. Orr & Co., Baker Building, Minneapolis, are consulting engineers.

Board of Education, Elgin, Ill., contemplates installation of manual training equipment in new two-story high and grade school, to cost about \$165,000, for which bids are being asked on general contract until Oct. 20. William B. Ittner, Continental Life Building, St. Louis, is architect.

Herman Body Co., St. Louis, has acquired a site in Peoria, Ill., for erection of a branch plant for manufacture of built-to-order truck bodies. Company will also manufacture trailer and truck accessories. H. J. Smith is vice-president.

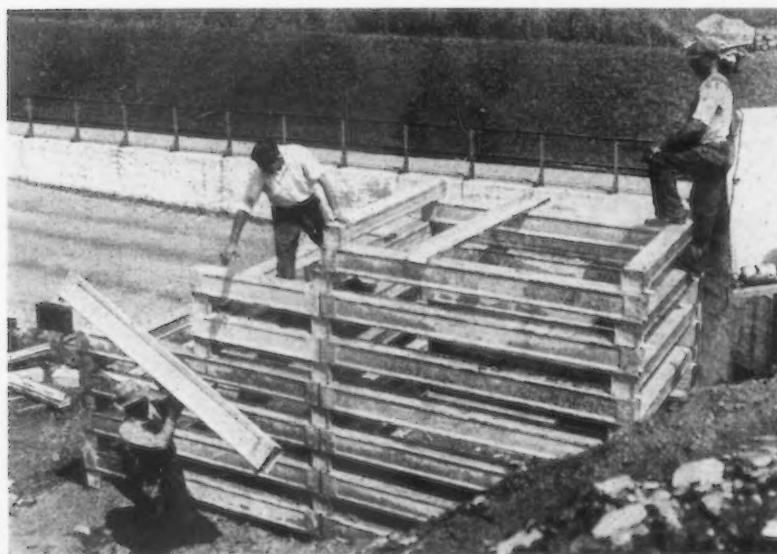
Red Jacket Mfg. Co., Davenport, Iowa, manufacturer of windmill and hand pumps, has secured exclusive rights from Alamo Engine Co., Hillsdale, Mich., for manufacture of Dorward rotary power head. About \$75,000 will be expended in expansion for production of electrical power pumps, which will range from those designed for farms to large industrial plants. Considerable equipment will be secured from Alamo company.

Power plant project at Kincaid, S. D., for the Montana-Dakota Power Co., work on which was halted in May, will go forward immediately. C. M. Garland & Co., consulting engineers, Chicago, are taking bids.

Cincinnati

DEPARTMENT of Public Welfare, Ninth and Oak Streets, Columbus, Ohio, is asking bids until Oct. 16 for a turbo-generator unit and auxiliary equipment for installation at power plant at Ohio State Penitentiary. John McSweeney is director.

Refiners, Inc., 11 West Monument



RETAINING WALLS BUILT WITH METAL CRIBBING

CONSTRUCTION of a retaining wall of the metal cribbing recently developed by the American Rolling Mill Co., Middletown, Ohio, is shown. The sections, galvanized ingot iron sheets, formed on dies, are open at bottom and paneled on the side. Tests have been made for compression, shearing and bending of the units, both separately and when locked together. These indicate that a stretcher has about the same moment of inertia as a 5-in. I-beam weighing 10 lb. per ft., the 5-in. dimension parallel to the load. A standard 8-ft. stretcher weighs about 50 lb. and a 6-ft. header about 40 lb.

Metal cribbing is being recommended for railroad and highway retaining walls, bridge wing walls and for river and harbor bank protection. It is also suggested for underwater crib foundations, where a large section of cribbing may be bolted together before submerging.

THREE WAREHOUSES *(strategically located)*

- ★ **CHICAGO**
- ★ **ST. LOUIS**
- ★ **ST. PAUL**

**Completely Stocked
Ready to Serve You
Quickly and Efficiently**

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ILLINOIS STEEL WAREHOUSE COMPANY
Subsidiary of United States Steel Corporation

Avenue, Dayton, Ohio, has plans for bulk oil storage and distributing plant at Cincinnati, with garage unit, to cost over \$55,000 with equipment.

Contracting Officer, Wright Field, Dayton, Ohio, is asking bids until Oct. 19 for 402 hand expansion reamers, 106 generator assemblies, airplane hardware, including bolts, nuts, rivets, screws, washers, etc., 1350 cutting diagonal pliers, 700 adjustable wrenches, and 276 screwdrivers; until Oct. 20 for keyseat cutters, milling cutters, metal slitting saws, die and collet complete, hand taps, adjustable dies, pipe dies, die holders, drill press sleeves, etc.

Carloss Well Supply Co., Main Street, Memphis, Tenn., oil well equipment and supplies, has plans for extensions and improvements in storage and distributing plant, to include installation of a traveling crane and other equipment, to cost about \$25,000. George Mahan, Jr., City Savings Bank Building, is architect.

Board of City Commissioners, Mount Sterling, Ky., plans early call for bids for a municipal electric light and power plant, with Diesel engine unit and auxiliary equipment. Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is consulting engineer.

City Council, Ludlow, Ky., plans installation of electric-operated pumping machinery, water-softening and auxiliary equipment in connection with extensions and improvements in municipal waterworks to cost over \$100,000. Glazier & Morledge, 305 Walnut Street, Cincinnati, are engineers.

South Atlantic

BIDS have been asked by Pangborn Corp., Hagerstown, Md., manufacturer of sand-blast equipment, parts, etc., for a one-story addition to cost over \$25,000 with equipment.

Blumenthal-Kahn Co., 518 North Charles Street, Baltimore, electrical contractor, has acquired property and business of Eugene I. Rosenfeld & Co., Inc., 325 West Baltimore Street, manufacturer of electric signs and displays, and will operate in future as Eugene I. Rosenfeld Division, expanding output for Neon and other electric sign specialties. H. C. Phillips will be manager of new division.

R. H. Bozman, Inc., 1050 Granby Street, Baltimore, operating a cold storage and refrigerating plant, has plans for a one-story addition, to cost close to \$40,000 with equipment. James R. Cox, 4547 Harford Road, is engineer.

Chesapeake Smelting & Refining Co., Baltimore, has been organized with capital of \$25,000 to take over and expand company of same name with plant at 200 Key Highway. Arthur V. Moore and W. Carroll Mead are principal incorporators.

Bureau of Yards and Docks, Navy Department, Washington, will receive bids until Oct. 14 for two-story addition to naval engineering experiment station at Annapolis, Md.

Lineberry Foundry & Machine Co., North Wilkesboro, N. C., is considering installation of an electric furnace for hardening small high speed steel tools and kindred products.

Officials of Silica Gel Corp., Baltimore Trust Building, Baltimore; Carrier Corp., 850 Frelinghuysen Avenue, Newark, N. J., and Safety Car Heating & Lighting Co., New Haven, Conn., have organized a joint subsidiary under name of Carrier-Safety-Silica Gel, Inc., to specialize in produc-

tion of air conditioning equipment and materials for railroad cars. It is proposed to concentrate large part of work of new company at plant of Safety Car Heating company.

General Purchasing Officer, Panama Canal, Washington, is asking bids until Oct. 15 for one electric-operated nibbling shear, forged steel turnbuckles, 10,000 ft. galvanized steel guy wire, 250 anchor shackles, 400 chain shackles, and other equipment; until Oct. 22 for automatic scale, wire rope, wire cable, dredge dipper parts, pipe, switches, meter-testing blocks and other electrical and mechanical equipment.

Liquid Carbonic Corp., Stephens and McDaniel Streets, Atlanta, Ga., manufacturer of carbonating equipment, bottling supplies, etc., has awarded general contract to Gilbert Beers, Bona Allen Building, for one-story addition, to cost over \$35,000 with equipment.

Cleveland

PLANS are under way by Greyhound Management Co., 1783 East Eleventh Street, Cleveland, operating Greyhound interstate passenger bus system, for one-story automobile service, repair and garage building, 115 x 520 ft., to cost about \$175,000 with equipment.

Moto Meter Gauge & Equipment Co., Hamilton Street, Toledo, Ohio, is carrying out expansion and improvements, preparatory to heavy production of a new type of temperature gage for automobile and other gasoline engines. Work includes installation of new equipment and changes in present machinery. More than \$600,000 will be expended.

Bids have been received for new three-story and basement storage and distributing plant at Youngstown, Ohio, to be occupied under lease by Great Atlantic & Pacific Tea Co., 420 Lexington Avenue, New York. Installation will include conveying, loading and other equipment. Entire project will cost about \$300,000. Young & Canfield, City Bank Building, Youngstown, are architects.

Department of Public Utilities, City Hall, Cleveland, is planning extensions and improvements in municipal electric light and power plant at Lake front and foot of East Fifty-third Street, with installation of new generating machinery and auxiliary equipment, to cost \$2,500,000. Election will be held in November to vote bonds in amount noted. E. H. Kreuger is director; L. A. Quayle is engineer.

Lincoln Oil & Refining Co., Findlay, Ohio, a subsidiary of Ohio Oil Co., same address, has approved plans for a new oil storage and distributing plant at Rudolph, Ohio, to cost over \$40,000 with equipment. Company will also expand distributing facilities near Toledo, Ohio.

Automatic Industries, Inc., 49 South Forest Street, Youngstown, manufacturer of mechanical equipment, has awarded general contract to Ray Shilling, Youngstown, for a one-story addition.

Pittsburgh

BOARD OF EDUCATION, McKeesport, Pa., has plans for multi-story vocational and industrial school, to cost over \$500,000 with equipment. C. R. Moffitt, Masonic Temple, is architect; Charles L.

Wooldridge, Inc., Fulton Building, Pittsburgh, is consulting engineer.

Walter R. Sundell, Ridgway, Pa., and associates have organized Sundell Mfg. Co., with capital of \$15,000, to operate local plant for manufacture of automobile accessories and other metal goods. Godfrey E. Sundell and C. H. Law, Ridgway, will be officials of company.

United States Engineer Office, Huntington, W. Va., will receive bids until Oct. 23 for erection of power house and land chamber for lock on Kanawha River at Marmet, W. Va. Engineer's Office, Pittsburgh, has plans for early call for bids for stationary dam in Ohio River, near Montgomery, Pa., to replace movable dams at Legionville, Freedom and Vanport, Pa., for which an appropriation of \$6,000,000 has been authorized.

Freedom Oil Works Co., Freedom, Pa., has awarded general contract to R. B. McDaniel, New Brighton, Pa., for two-story and basement lubricating oil works, to replace part of plant recently destroyed by fire, to cost close to \$200,000 with equipment. J. E. Martsolf, Third Avenue, New Brighton, is architect. E. J. Bischoffberger is general manager.

Kanawha Valley Power Co., Charleston, W. Va., an interest of Appalachian Electric Power Co., Roanoke, Va., has applied for permission to build two hydroelectric generating plants on Kanawha River on sites selected at 23 miles and 8 miles, respectively, above Charleston. Project will cost about \$5,000,000 with transmission system.

St. Louis

PLANS are under way by Western Service Corp., Braniff Building, Oklahoma City, Okla., for natural gas distributing plant and system at Britton, Okla., where franchise has been secured. Work will also begin soon on installation of gas distributing system at Shawnee, Okla.

Contract has been let to Ben Hur Erection Co., 5100 Farlin Street, St. Louis, for five-story and basement plant, 120 x 168 ft., to be occupied under lease by Star Chronicle Publishing Co., Twelfth and Olive Streets, for newspaper printing and publishing plant. Installation will include presses, electric power equipment, hand crane, conveying and other equipment. Project will cost close to \$1,500,000.

Board of Directors, Jones Academy, Hartshorne, Okla., has plans for a one-story manual training building, 36 x 85 ft.

Arkansas Power & Light Co., Pine Bluff, Ark., plans extensions and improvements in high-tension transmission system and power substation, to cost over \$325,000.

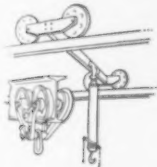
Hickson-Rogers Mfg. Co., Paragould, Ark., manufacturer of spokes and other turned wood products, is rebuilding part of plant recently destroyed by fire, to cost, with equipment, over \$50,000.

Construction Quartermaster, Fort Riley, Kan., has secured low bid from Harman Engineering Co., 844 North Rush Street, Chicago, for one-story hangar, 120 x 243 ft., with two extensions, 22 x 40 ft. for shop and service purposes, and annex, 21 x 44 ft., for boiler plant, at \$52,767. Project will cost about \$85,000 with equipment.

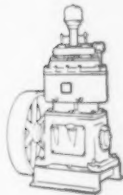
In connection with removal of main operations to Lambert-St. Louis Airport, Lambert Field, Mo., where building has been leased, Monocoupe Corp., Moline

**CURTIS I-BEAM
AIR CRANE**

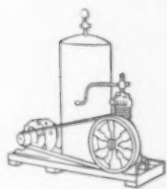
Has 10 to 40-foot span,
1½ to 10-ton capacity.
Roller bearing, easily
handled. Requires no
special operator; success-
fully operated by any
workman, especially
with Curtis Air Hoists.

**I-BEAM TROLLEY**

Has large wheels, roller
bearings, self-equalizing
frame and other features
to make it unusually
easy running.

**CURTIS
COMPRESSOR**

Sizes 3 to 50 h.p. Tim-
ken bearing equipped
Water cooled. Curtis
new Centro-ring lubri-
cating system assures
lowest oil consumption
with certainty of safe
lubrication. Unloader
regulates air pressure.
Bypass valve permits
starting unloaded. "Car-
bon Free" valve design
insures greater efficiency.

**CURTIS
PAINT SPRAY
COMPRESSOR**

Sizes ¼ to 5 h.p.
Single or two-stage.
Automatic control. Rec-
ommended by leading
manufacturers of spray
guns. Centro-ring lubri-
cation prevents clogging
of filters, minimizes
chance of lubricating oil
getting into air lines to
ruin the paint job.



Simplicity! Only one moving part.
No costly production interruptions
from hoist failure. It's abuse-proof.

Aside from low first cost and economy of operation,
Curtis *simplicity* offers endless advantages over compli-
cated power hoists. Because of simple, abuse-proof con-
struction, Curtis Air Hoists can be handled by ordinary
labor. No damage in over-loading. It simply won't lift.

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CURTIS

AIR HOISTS

Ill., has taken over property of Mono Aircraft Corp., and Lambert Aircraft Engine Co., Moline; last noted will be operated as Lambert Engine & Machine Co. Majority of aircraft production, including fabrication, assembling, etc., will be carried out at Lambert Field plant. P. D. C. Ball is president.

Sioux City Flying Service, Sioux City, Iowa, organized by P. L. Gregersen, 4248 Harrison Street, and associates, is planning erection of hangar, with repair shop and other field units, on site recently secured at South Sioux City, Neb., to cost close to \$40,000 with equipment.

Oklahoma Gas & Electric Co., North Harvey Street, Oklahoma City, Okla., has filed plans for one-story equipment storage and distributing plant, 50 x 154 ft., to cost close to \$30,000 with equipment.

Board of Public Works, Oklahoma City, Okla., contemplates one-story hangar, 120 x 120 ft., at municipal airport, with repair facilities, to cost over \$40,000 with equipment. L. M. Bush is engineer.

Gulf States

PLANS have been approved by Kimbles Ice & Storage Co., Bronson, Fla., for new electric-operated ice and cold storage plant at Williston, Fla., to cost over \$50,000 with machinery.

Board of Education, San Antonio, Tex., has plans for new junior high school for negroes, to include manual training department, to cost over \$175,000. Harvey P. Smith, National Bank of Commerce Building, and Emmett T. Jackson, Builders' Exchange Building, are associated architects.

Orleans Levee Board, New Orleans, has plans for group of field buildings for municipal airport on Lake Pontchartrain, including hangars, repair shops, oil storage and distributing building and other structures, to cost \$650,000 with equipment. National Airport Engineering Co., 775 East Washington Street, Los Angeles, is engineer. John Klorer is engineer for board.

C. E. Stolz, Llano, Tex., and associates have organized Premier Granite Finishing Works, Inc., with capital of \$50,000 and plan operation of stone cutting, polishing and finishing plant.

Pan-American Petroleum & Transport Co., 122 East Forty-second Street, New York, affiliated with Stanolind Oil & Gas Co., an interest of Standard Oil Co. of Indiana, has acquired 270 acres at Texas City, Tex., and contemplates oil refinery, storage and distributing plant, to cost over \$600,000 with equipment. Company has also secured right-of-way for pipe line to Texas City waterfront.

Community Natural Gas Co., operated by Lone Star Gas Co., Dallas, Tex., has purchased gas distributing plants and systems at Abilene and Cisco, Tex., and will consolidate with other properties. Expansion is contemplated, including pipe line construction.

Lengsfeld Brothers Co., 1101 Tchoupitoulas Street, New Orleans, manufacturer of paper boxes and containers, will construct top story addition, providing about 20,000 sq. ft. additional space, and install new automatic machinery and other equipment, to cost more than \$100,000.

United Air Lines, Love Field, Dallas, Tex., has awarded general contract to Austin Co., Allen Building, for hangar, 130 x 150 ft., with repair and recondition-

ing facilities, to cost \$100,000 with equipment.

Texas Public Service Co., San Angelo, Tex., has plans for natural gas plant at Texon, Tex., primarily for removal of sulphur content, with compressor and other machinery, to cost over \$50,000.

Florida Trap Rock Products Co., Zephyrhills, Fla., plans erection of a new rock-crushing, storage and distributing plant near city, with installation of crushing, conveying, loading and other handling equipment. A power house with Diesel engine and accessory equipment will be built. Project will cost more than \$40,000.

L. C. Wynne, Houston, Tex., and associates have organized Southern Bolted Steel Tank Co., with capital of \$10,000 and will operate plant for production of steel tanks and other plate products. S. J. Krum, Houston, is interested in company.

Birmingham Tank Co., Birmingham, has purchased assets of bankrupt Hartsfield Steel Co., manufacturer of steel barrels, containers, etc., which ceased operations early this year. Operations are scheduled to be resumed this week at former Hartsfield plant. Equipment will be transferred later to Birmingham Tank Co. plant and line of products increased.

Detroit

PLANS have been filed by Detroit Edison Co., 2000 Second Street, Detroit, for addition to steam-operated electric power plant for new turbo-generator installation, to cost \$530,000 with equipment. Company has also taken out a permit for a new electrical research laboratory, to cost about \$75,000 with equipment.

Square D Co., 6060 Rivard Street, Detroit, manufacturer of electric switches and other safety devices, has awarded general contract to W. E. Wood Co., Union Guarantee Building, for a one-story addition, to cost about \$30,000 with equipment.

Rex C. Jacobs, 6901 East Lafayette Street, Detroit, and associates have organized Wayne Bolt & Nut Co., with capital of \$25,000, and will operate plant for manufacture of bolts, nuts, screws and kindred products. Alfred A. Aminger, Detroit, is interested in company.

Calumet & Hecla Consolidated Copper Co., Calumet, Mich., has plans for three-story building at smelting plant at Lake Linden, Mich., primarily for research laboratory, to cost close to \$100,000.

Kellogg Co., Battle Creek, Mich., manufacturer of cereal and food products has begun construction of addition to plant at London, Ont., to cost over \$400,000 with machinery.

MacKirdy Engine Mfg. Co., 317 Reid Building, Detroit, recently organized, plans operation of works for manufacture of gasoline engines and parts. Ray M. Shull and Walter E. Evans are principal incorporators.

Harris Milling Co., Mount Pleasant, Mich., has plans for an addition to electric power plant, with installation of additional equipment, to cost over \$50,000. Hamilton & Weever, Grand Rapids, Mich., are consulting engineers.

General Motors Corp., General Motors Building, Detroit, will increase capacity of plant at St. Catharines, Ont., for production of motor parts for Canadian cars, heretofore manufactured at other factories, including steering gears, formerly

produced at Saginaw, Mich.; shock absorbers, heretofore manufactured at Dayton, Ohio; ignition equipment, previously manufactured at Anderson, Ind.; spark plugs, formerly produced at Flint, Mich., and new line of axle shafts.

W. B. Jarvis Co., Grand Rapids, Mich., manufacturer of automobile accessories and equipment, is developing a capacity schedule, with 24-hr. working basis in a number of departments.

Ford Motor Co., Dearborn, Mich., has asked bids on general contract for new one-story plant, 160 x 330 ft., at Ypsilanti, Mich., to cost about \$100,000 with equipment. Contract for foundation has been let to Christman-Burke Co., Fisher Building, Detroit. Albert Kahn, Inc., Detroit, is architect and engineer.

Indiana

CONTRACT has been let by Central Fibre Co., Vincennes, manufacturer of fiber containers and other products, to Voight & Son, Louisville, Ky., for one-story factory and power house addition, to cost about \$45,000 including equipment.

Eel River Power Co., an interest of American Utilities Securities Co., Continental Bank Building, Indianapolis, contemplates hydroelectric generating plant on Eel River, Putnam County. Project will include a power dam 163 ft. high and 1000 ft. long. A transmission line will be built. Development will cost more than \$500,000.

Carbon Products Corp., 1225 North Illinois Street, Indianapolis, recently organized, has leased property at 235 West Merrill Street and will establish storage and distributing plant for charcoal products and kindred specialties, to include loading and other equipment.

Lincoln Oil Co., Muncie, will build a machine and repair shop in connection with two-story service building to cost about \$45,000 with equipment.

City Council, Brazil, is considering installation of a municipal electric light and power plant and will secure details of machinery and estimates of cost.

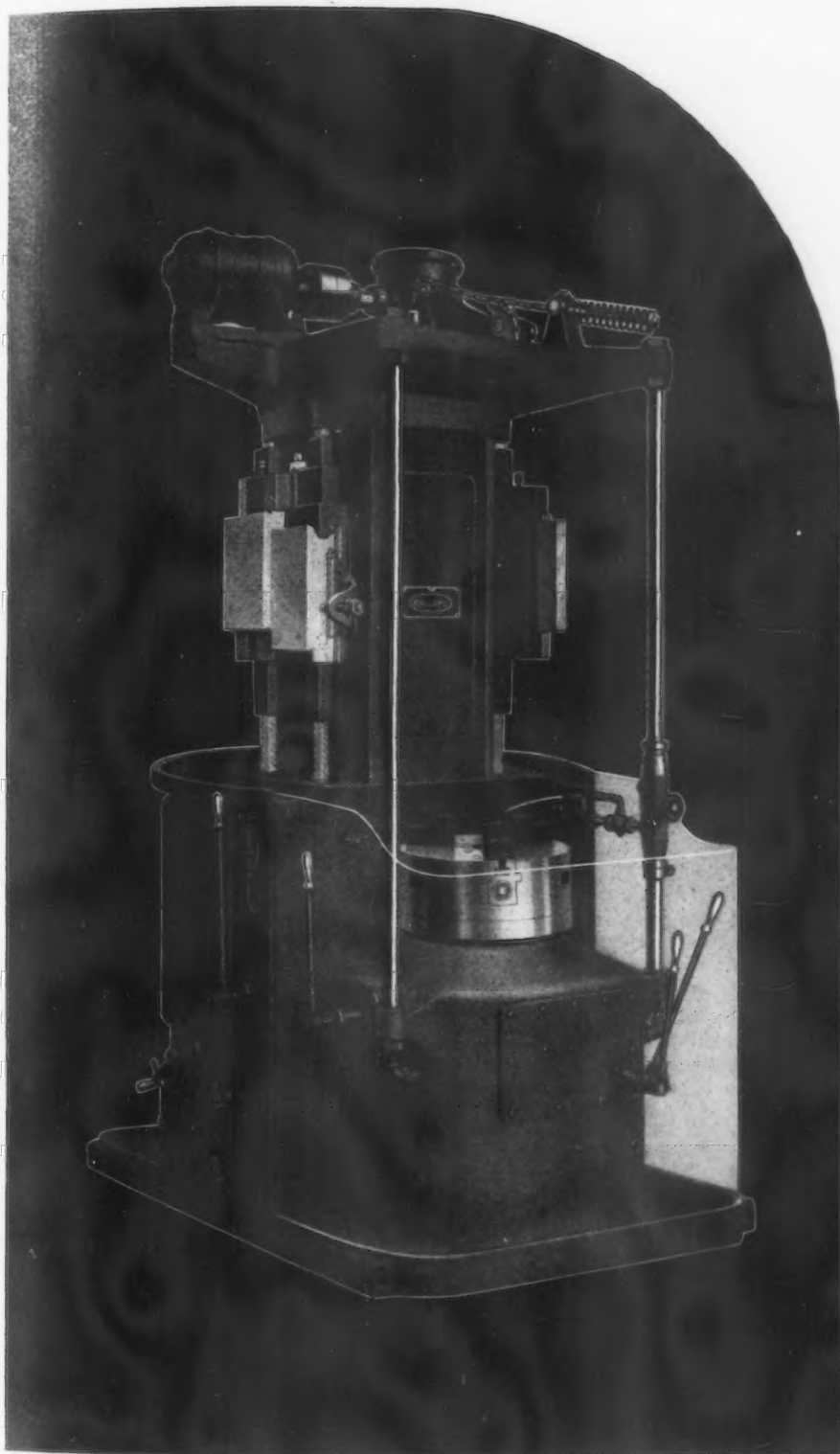
Board of Public Works, Fort Wayne, is asking bids until Nov. 3 for a municipal filtration plant, with pumping equipment and auxiliaries for a capacity of 24,000,000 gal. a day. Project will cost close to \$1,000,000 with machinery. Hoad, Decker, Shoecraft & Drury, Ann Arbor, Mich., are consulting engineers.

Pacific Coast

PLANS are under way by Firestone Tire & Rubber Co., Akron, Ohio, for a one-story addition to plant at South Gate, near Los Angeles, for production of electric batteries, to cost \$100,000 with equipment. M. H. Pade is company engineer at South Gate plant, in charge.

Pennsylvania Iron & Steel Co., 2208 Santa Fe Avenue, Los Angeles, has awarded general contract to Lynch-Cannon Engineering Co., Chapman Building, for a one-story shop addition, 72 x 143 ft.

Metropolitan Water District of Southern California, 222 South Hill Street, Los Angeles, has been authorized to arrange bond issue of \$220,000,000 for construction of Colorado River aqueduct across State for water supply, distance of 266 miles. Project will include power plant,



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Business as Others See It

Digest of Current Financial and
Economic Opinion

SUSPENSION of gold payments by the Bank of England remained the matter of foremost interest in world affairs last week, with serious repercussions apparent in all countries. So writes *Financial Chronicle*, and scrutiny of other reviews bears it out. What seems to hurt most is the state of confusion and uncertainty following the British action.

This, says the First National Bank, Boston, is "largely responsible for the prevailing pessimism in some quarters. Too many raids have been made, and are contemplated, upon the public treasury. But the inevitable effect of excessive public expenditures . . . has been to lower the living standards of communities and even of entire countries. . . .

"In the long run, schemes involving excessive public expenditures discourage private enterprise. If such policies become entrenched, as they have become in some countries, the final outcome is increased unemployment, much of which may become chronic, lower wages and reduced standards of living."

Harvard Economic Society believes that "internal readjustments to the new value of money [Great Britain] work out only gradually; so that the advances which occur in commodity prices have the immediate effect of increasing the spread between prices and costs. . . . Experience shows that both export and domestic trade derive

an immediate stimulus from depreciation in the value of the currency and the resulting rise in prices."

An unbalanced budget such as that of Great Britain is "a familiar phenomenon of depression," says National City Bank, New York. But, in Britain's case, "the public has come to regard the deficit . . . as the outward symptom of a much more serious maladjustment—failure to balance the country's foreign trade." The reaction of other foreign exchanges and money markets to the fall in sterling "is partly psychological and partly the result of heavy losses felt by all lenders having balances in London."

England is rankly overpopulated, according to Brookmire, and "the old industrial order of Europe has had the ground pretty much cut out from under it. . . . Countries with depreciated currencies will collectively have an advantage as against the United States. The sum total of world trade is likely to diminish, as such a large part of the world will have its buying power curtailed."

Britain's action means inflation, avers Theodore H. Price in *Commerce and Finance*. But Stephen Bell, in that paper, decries all talk of any revaluation of the pound sterling: "It is unlikely that this will be done immediately, if ever."

But J. M. Keynes, who opposed revalorization of sterling in 1925, waxes enthusiastic over "breaking of our gold standard—our gold fet-

ters." According to *Financial Chronicle*, "he argues for a 25 per cent [permanent] depreciation, maintaining that imports would thus be restricted as effectively as by a 25 per cent tariff, while exports would be aided."

That journal has no patience with the talk here in favor of "bi-metalism," a policy which was buried in 1896. It refers to the immense current withdrawals of gold as disconcerting, but assumes that "the law of economics is furnishing its own corrective. . . . A disposition has grown up to attribute all the world's ills to the fact that the United States holds such a large proportion of the stock of gold. . . . [and] we have been led to believe that if some portion of the American supplies were placed at the disposal of the rest of the world, everything would quickly become well."

Failure of low money rates to stimulate stocks or business is attributable partly to lack of confidence, Harvard says, but also partly to the fact that low money rates are now confined to creditor nations—as United States and France. Britain's drastic move "may prove an important step in the cure of business depression throughout the world." And our present gold exports have moved the metal "to those countries where interest rates are low and exchange rates high, so that it does not equalize the distribution."

electric-operated pumping plants at different points along route, pipe lines, shops and equipment. It will provide water for 13 cities in southern California and will require six years for completion. Julian Hinds is chief engineer.

Cleghorn & Lenhart Packing Co., Highland, Cal., plans installation of conveying equipment and other machinery in new one-story and basement fruit packing plant, 70 x 120 ft., for which general contract has been let to Lafe Coker, San Bernardino, Cal., to cost about \$30,000 with equipment.

National Motor Inns, 624 Rialto Building, San Francisco, has plans for six automobile service, repair and garage buildings at Los Angeles, Bakersfield, Santa Barbara, Paso Robles, Fresno and Sacramento, Cal., respectively, to cost over \$550,000 with equipment. Benjamin G. McDougall, 353 Sacramento Street, San Francisco, is architect.

Olympic Forest Products Co., San Francisco, has awarded a general contract to Austin Co., Dexter Horton Building, Seattle, for a one-story pulp storage and distributing plant, 66 x 240 ft., at Port Angeles, Wash., to cost close to \$40,000 with equipment.

Department of Lighting, city of Seattle,

will ask bids soon for completion of municipal hydroelectric generating plant on Skagit River, below Diablo Dam, including power and other machinery, to cost over \$600,000. A traveling crane will be installed.

Randolph Irrigation District, Florence, Ariz., plans erection of 34 electric-operated pumping plants in connection with an irrigation project, for which a bond issue of \$624,000 has been approved. Scott Engineering Co., Ellis Building, Phoenix, Ariz., is engineer.

Albert C. Martin, Higgins Building, Los Angeles, architect, has awarded general contract to Lynch-Cannon Engineering Co., Chapman Building, for a five-story and basement automobile service, repair and garage building, 140 x 200 ft., to cost over \$150,000 with equipment.

California-Oregon Power Co., Medford, Ore., has applied for permission to issue bonds in amount of \$4,000,000, part of fund to be used for extensions and improvements in plants and system. Company is unit of Standard Gas & Electric Co., New York.

Ballard Drop Forge Co., Seattle, Wash., has changed its name to the Northwest Bolt & Nut Co.

Foreign

OFFICIALS of Carrier Corp., 850 Frelinghuysen Avenue, Newark, operating Carrier Engineering Corp., Carrier-Lyle Corp. and other subsidiaries for manufacture of air conditioning machinery, heating equipment, etc., are organizing Carrier Australasia, Ltd., to operate a plant at Sydney, Australia. Branches will be established at Melbourne, Australia, and Wellington, New Zealand.

Department of Public Works, Wellington, New Zealand, will receive bids until Dec. 15 for 270 galvanized steel transmission towers for high-tension electric service, complete with cross-arms and accessories, fittings, etc.

Director-General, Swedish State Railways, Stockholm, Sweden, plans completion in 1933 of Stockholm-Malmö railroad, now being electrified, and will proceed with program covering 599 kilometers through 1932. It is also proposed to electrify west coast railroad from Gothenburg to Malmö, 315 kilometers, and Norrland line from Stockholm to Ånge, 616 kilometers. Last two noted projects will cost 79,200,000 kroner (about \$21,225,600).

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OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif.

Export Distributors—United States Steel Products Company, 30 Church Street, New York, N. Y.

▲▲▲ New Trade Publications ▲▲▲

Heating Devices.—General Electric Co., Schenectady, N. Y. Folder presents features of strip heaters, cartridge units, soldering irons, gluepots, heli-coil immersion heaters and compound-melting pots.

Steel Castings.—Chicago Steel Foundry Co., Chicago. Folder features Pyra-steel and Evansteel, alloys produced in several grades, adaptable for making various types of steel castings.

Plastic Products.—General Electric Co., Schenectady, N. Y. Catalog GEA-937B gives information, prices, etc., on all grades of plastic products made by the company.

Engineering Models.—Paul F. Hermann Co., Pittsburgh. Booklet illustrates a number of Schumann and other engineering models, both operating and stationary, made to scale. An interesting model pictured is that of a complete gas-producing plant, showing in detail various phases of material handling, by-product coke ovens, gas-producers, gas-washers, gas-holder, boiler house, etc., all mechanically operating.

Automatic Time Switches.—General Electric Co., Schenectady, N. Y. Eight-page illustrated catalog describes general-purpose automatic time switch, designed for a.c. circuits, 115 and 230 volts and up to 30 amp.

Overhead Material-Handling Equipment.—American Monorail Co., Cleveland. Attractively bound 192-page catalog, profusely illustrated, gives description and specifications of the company's system of overhead handling equipment. Illustrations include a number of installations in industrial plants throughout the country. Many novel devices are featured.

Insulation.—American Lava Corp'n. Chattanooga, Tenn. A 24-page booklet on lava as a material for various types of insulators, bushings, thermocouple plugs, nozzles, handles, tubes and other specialties. As a dielectric, lava withstands high potentials with uniformity and for an indefinite period, it is stated. It withstands temperatures in excess of 2000 deg. F. and is heat treated to a compressive strength of 20,000 to 30,000 lb. per sq. in. A section of the catalog is devoted to extruded magnesia for radio and television insulation.

Oxygen Producing Equipment.—Gas Industries Co., Pittsburgh. Broadside illustrating air oxygen plants, suitable for large or small users of the gas and said to produce oxygen of a purity of 99.5 per cent or better.

Heat Exchangers.—Schutte & Koerting Co., Philadelphia. "Polyplate" heat exchangers for liquids as well as steam, air and gases are described in a two-page bulletin. Units are built up of specially formed plates providing helical counter flow without the use of tubes or tube plates.

Fluid Meter.—Schutte & Koerting Co., Philadelphia. Four-page bulletin devoted to the "Rotameter," a device for measuring rate of flow of gases or liquids.

Speed Reducers.—Universal Gear Sales Corp'n., Indianapolis. Illustrated catalog, 76 pages, featuring "Heliocen-

tric" speed reducers made in capacities from $\frac{1}{4}$ to 150 hp. and in ratios ranging from 20 to 1 to 1,000,000 or more to 1. Also helical geared reducers for ratios below 20 to 1. Complete information, including dimensions, ratios and ratings for each type and size of unit, is given.

Roll Grinders.—Farrel-Birmingham Co., Ansonia, Conn. Informative 24-page booklet, No. 107, describing modern practice of precision grinding all types of rolls used in the production of sheet materials (all metals, rubber, plastics, paper, etc.) as well as printing press cylinders and other cylindrical parts requiring accuracy within close limits and a surface of uniform smoothness. Special roll grinding machines built by the company are also described.

Gear Generators.—Gleason Works, Rochester, N. Y. Properties of straight bevel gears are outlined in new pamphlet which illustrates operating principle of straight bevel gear generating machines. Gleason generator tool sharpener, bevel gear testing machine and quenching press are described also.

Machine Cutting.—General Welding & Equipment Co., 70 Lansdowne Street, Boston. Development and application of cutting by machines utilizing oxy-acetylene and other gas torches are described in a 42-page booklet. Automatic cutting machines are illustrated and examples given of products fabricated by welding parts cut to finished size by means of this equipment.

Marine Steam Propulsion.—Babcock & Wilcox Co., 85 Liberty Street, New York. Bulletin entitled "Modern Steam" outlines evolution of marine steam propulsion from low pressure plants to the present economical use of steam power.

Chain Grate Stokers.—Babcock & Wilcox Co., 85 Liberty Street, New York. Booklet describes various types of stokers made by this company. Illustrations include typical setting views showing installations in connection with various types of boilers.

Return Bend Economizer.—Babcock & Wilcox Co., 85 Liberty Street, New York. Economizers of the forged steel return bend type, designed to provide a high rate of heat transfer with freedom from expansion strains, are illustrated in a new bulletin.

Ball Bearings.—New Departure Mfg. Co., Bristol, Conn. Price and data book, eighth edition, 60 pages, contains important revisions and additions to previous listings of types, capacities, dimensions and mounting details. The information is classified according to type of bearing and the sections of the volume are thumb indexed for convenient reference.

Welding Equipment.—Mattice Engineering Co., 2233 Vine Street, Philadelphia. Accessories of all kinds for use in electric welding are illustrated in catalog No. 20, 16 pages.

Capacitors.—General Electric Co., Schenectady, N. Y. Booklet describes various types of capacitors for power-factor correction. Data, including graphs and tables, and prices are given.

Forge Fittings.—Taylor Forge & Pipe Works, Chicago. Illustrated booklet, 31 pages, covers seamless pipe fittings for weldings, elbows, tees and flanges. Tables of dimensions are included.

Pneumatic Tools.—Cleveland Pneumatic Tool Co., Cleveland. New illustrated catalog, presented in French, covering pneumatic-operated tools, machinery and accessories made by the company and by its associated concern, Cleveland Rock Drill Co.

Switching Locomotives.—Electric Storage Battery Co., Philadelphia. Various types of storage battery, combination battery and trolley, and battery-oil-electric switching locomotives are described and pictured in a 30-page booklet. Engineering information and other data are included.

Aluminum Paint.—Aluminum Co. of America, Pittsburgh. Illustrated booklet, 45 pages, covers uses, utility and application of aluminum paint. It is recommended as protective coating for metal products, particularly for barring rust and resisting corrosion, and is also suggested as a coat for foundry patterns, in view of its ability to withstand moisture.

Gas Holders.—International-Stacey Corp'n., Cincinnati. Illustrated folder describes the patented Stacey-Klonne dry gas holder. Advantages claimed for this type of holder include savings in foundation costs, ability to maintain uniform gas pressure and low painting costs.

Single-Phase Motors.—Century Electric Co., St. Louis. Folder describes and illustrates Century type RS repulsion start, induction, single-phase motors, claimed to be adaptable particularly to the operation of plunger pumps, compressors, oil burners and refrigerating machines.

Blowers and Gas Pumps.—International Stacey Corp'n., Connersville, Ind. Series of bulletins covers specifications and data tables pertaining to R-C-W standard and heavy-duty blowers and gas pumps.

Excavators.—Marion Steam Shovel Co., Marion, Ohio. Bulletin No. 345 illustrates and describes Type 120 $\frac{1}{2}$ -cu. yd. gas shovel, dragline, clamshell and crane.

Dust Collectors.—Dust Recovery, Inc., 15 Park Row, New York. Short, concise description of construction, operation, applications and advantages of the "Vorticoose" dust collector is embodied in the text of a 15-page booklet.

Electric Motors.—General Electric Co., Schenectady, N. Y. A number of bulletins, illustrating and describing various types of G.-E. motors, including fractional-horsepower, d.c., type BC; constant- and adjustable-speed, d.c., types BD and CD; constant-speed, d.c., type CD, totally inclosed, fan-cooled induction; general-purpose, squirrel-cage induction; solid-shaft, vertical induction; explosion-proof, totally inclosed, fan-cooled induction; and type BTA a.c. motors.

Carburizing Process.—Carbide & Carbon Chemicals Corp'n., New York. Advantages of Pyrofax carburizing process for case-hardening low-carbon steel is described in an illustrated folder. Pyrofax, the gas used in this process, is described as a highly purified, uniform quality, hydrocarbon gas with high carbon content.

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